Metro Signage Standards

Metro Signage

VERSION 1.2: February 27, 2012 2:03 PM

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Sections

1. Under development.

2. Metro Graphic Standards

3 thru 8 Under development

9. Metro Amenities Standards

10. Metro Materials & Fabrication Standards

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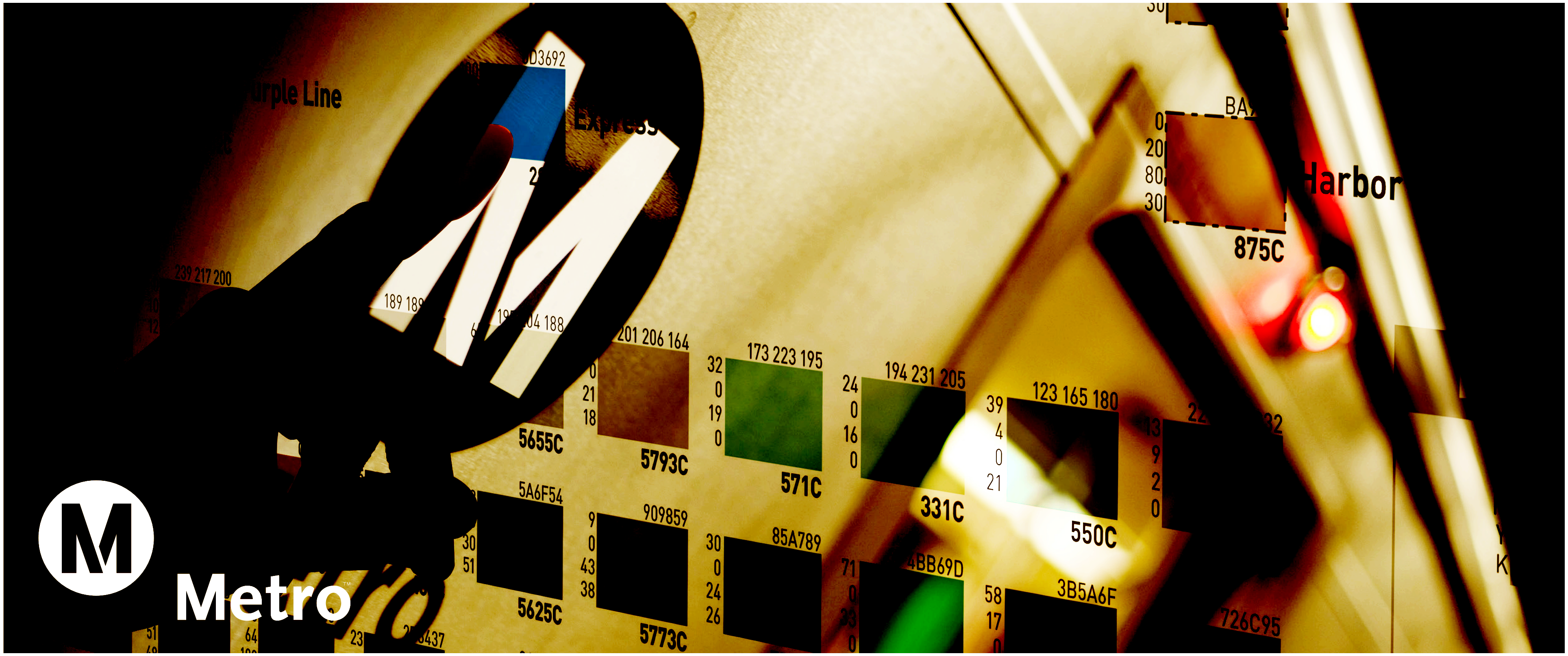
Metro Graphic Standards

2.0


Metro
Purple Line
Express
Harbor
875C
5655C
5793C
571C
331C
550C
5625C
5773C
201 206 164
173 223 195
194 231 205
123 165 180
5A6F54
909859
85A789
4BB69D
3B5A6F
726C95
239 217 200

GRAPHIC STANDARDS

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Metro Graphic Standards

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Introduction

Metro's graphic identity is the result of a long-term, comprehensive analysis and exploration of ways in which Metro can increase the consistency of our public image and reinforce Metro's reputation for quality, efficiency, and safety.

Metro occupies a unique position in the world of public transportation. In a region that is not traditionally known for public transit, Metro consistently achieves world-class levels of recognition for safety, for quality, and for design. Metro's visual identity embodies these high standards.

Consistency and quality in Metro's graphic identity represents the professionalism of Metro's employees and the vision Metro brings to urban life in Los Angeles County.

A consistent graphic identity is not just important for public relations. Graphic standards reduce operational costs by reducing duplication and provide guidelines to help avoid "reinventing the wheel."

When communication is clear, consistent, thoughtfully designed and attractively presented, everyone benefits. Ⓜ

M
Metro
Hollywood/
Highland

Metro Logo

Metro adopted a new logo on January 1, 2004. Shown below, it consists of two elements: the M symbol and the Metro name.

The Metro logo is a copyrighted marque.

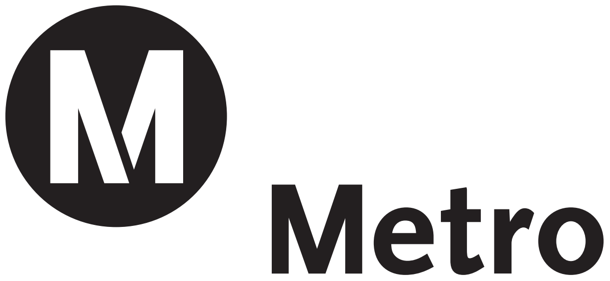
Because the integrity of any logo depends on consistent usage, the alignment and proportions of this logo may not be altered in any way.

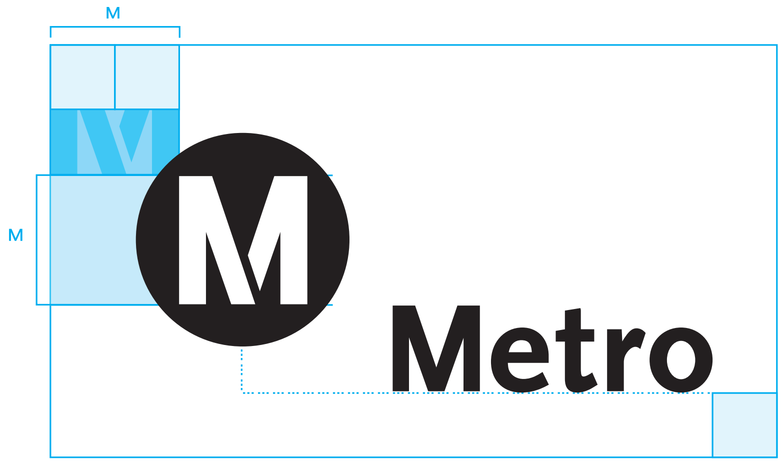
Minimum Visual Buffer

The Metro logo must have a “buffer” space around it maintain visual impact and legibility. No other elements: typography, lines, photos, or other elements must infringe on this clear space. The minimum space needed is proportional to the size of the M.

The alternative vertical and horizontal logo applications, shown on the following page, also follows this rule.

Public Signature





Metro Logo continued

For official documents, the Metro logo is paired with the legal title of our agency, Please contact Creative Services directly if you encounter a situation where this combined logo is necessary.

The Metro logo is a unique design and cannot be accurately reproduced with any existing typeface. It may not be hand-drawn, scanned or modified in any way.

Digital files of approved versions of the Metro logo may be requested by contacting:

☎ Kim Bueno
Signage Project Manager

Metro
One Gateway Plaza
Mail Stop 99-19-1
Los Angeles CA 90012-2952

213.922.7695 (phone)
213.922.2719 (fax)
buenok@metro.net

Please remember that "Metro" is the proper term to be used when referring to our agency.

All signage and graphics must be submitted to Metro Creative Services for review and approval.

Official Signature

Metro™

Los Angeles County
Metropolitan Transportation Authority

Alternate – Vertical

Metro™

Alternate – Horizontal

Metro™

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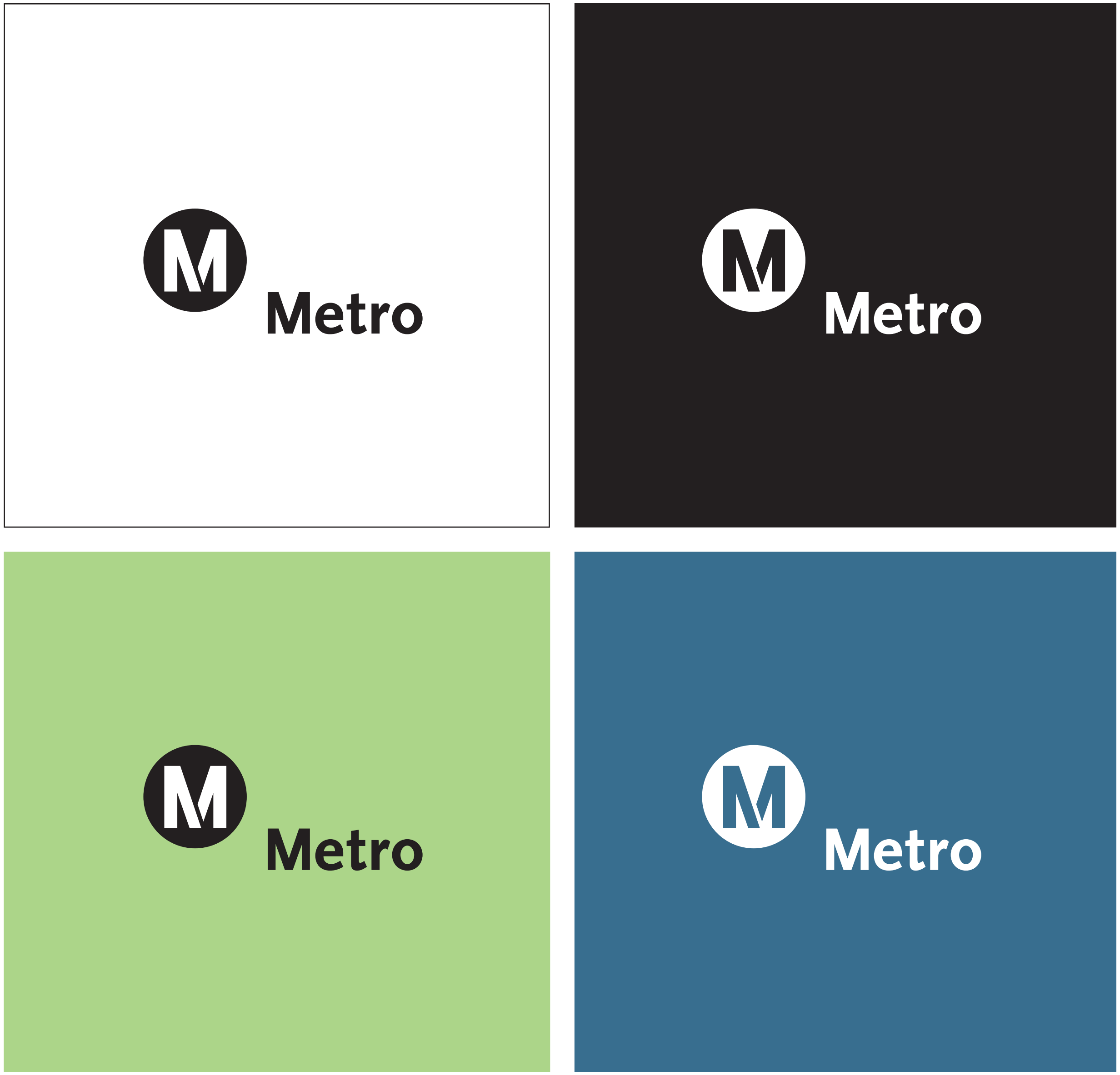
Metro Logo continued

The Metro logo should always be set apart from its background with a high degree of contrast. In background environments of up to 40% in value, the logo should be rendered in black. Reverse the logo to white against backgrounds of a value of 40% or darker.

In situations where a colored background is appropriate, such as safety signage, it may be acceptable to drop out the Metro "M" in white while keeping the logotype, "Metro" in black. A background of no greater than 40% value must be used in these situations. These applications will need approval by Metro Creative Services.

In all cases, care should be taken to allow the Metro logo to remain as visible as possible by providing maximum contrast.



Metro Logo continued

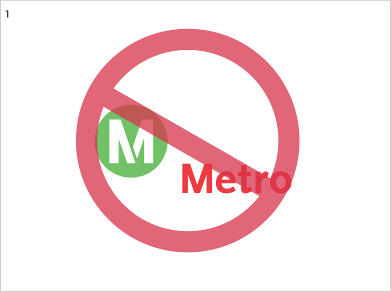
The design integrity and familiar legibility of the Metro logo is something that our colleagues and our riders expect and depend upon.

It is very easy to modify an image with common software filters and special effects. The images to the right illustrate some of the most obvious examples of the misuse of the Metro logo.

These and other alterations must be avoided at all times. None of them are acceptable.

The best logos are visual reminders of complex associations and beliefs. Repeated viewing of a consistent logo builds awareness, trust, and loyalty.

Alterations to the Metro logo, no matter how minimal or carefully made, erode that confidence. Ⓜ

1


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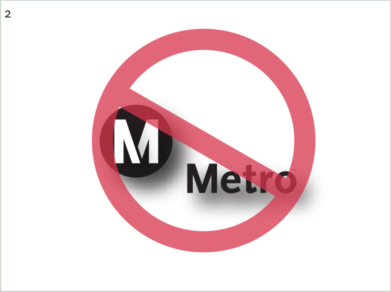
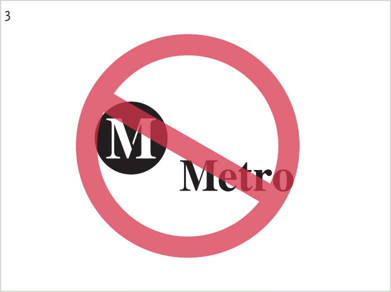
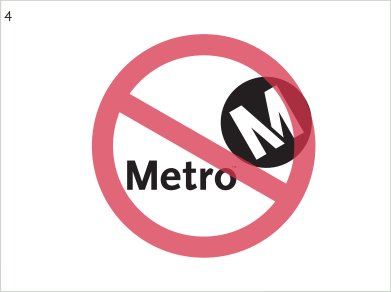


3


4


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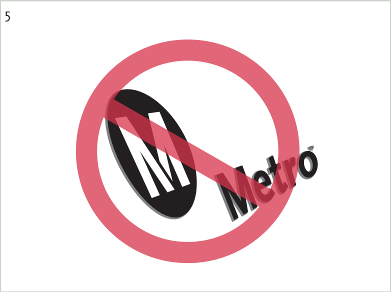

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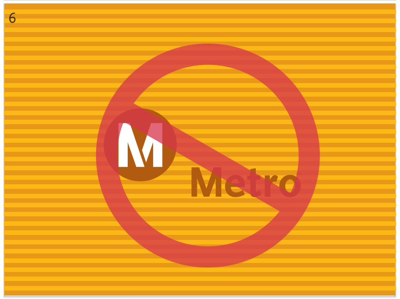

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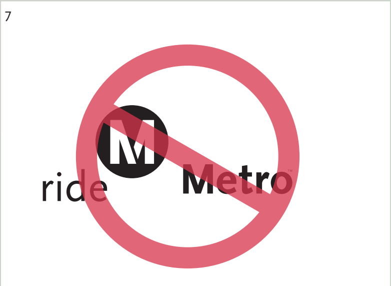
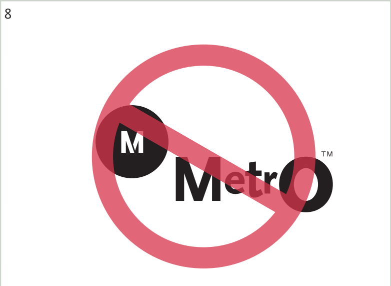


8


Color Palette

Color is an essential component to the brand identity and services provided by Metro. The following colors identified in this section contain palettes repesentative of Metro Bus, Metro Rail, Metro Transitway and a limited corporate palette.

Metro uses the Pantone Matching System. Color equivalents for each swatch have been defined for CMYK (4/C process) and Matthews Acrylic Polyurethane (paint). Please contact Metro Creative Services for 3M Controltac Plus & Scotchlite Plus Films (vinyl) equivalents.

Quality control is vital to maintain a consistent look among all Metro services. Metro Creative Services will require quality checks during fabrication and upon delivery of signs. Ⓜ

References

♿ PMS 300 C is required for all ADA-accessible symbols

Metro Corporate

Metro Black

Pantone Black 6 C
CMYK: 100-35-0-100
Matthews Paint: Satin VOC, SV923
3M Gerber 280i Reflective Black Vinyl
3M Controltac 180C-12 Black Vinyl (Non-Reflective)

Metro White

Pantone White C
CMYK: 0-0-0-0
Matthews Paint: Satin VOC, SV202
3M Gerber 280i Reflective White Vinyl
3M Gerber High Performance Series 220 White (Non-Reflective)

Metro Regulatory Palette

Metro ADA Blue

Pantone 300 C
CMYK: 100-44-0-0
Matthews Paint: MP00366
3M Gerber 220 Series "Intense Blue"

Metro Emergency Red

Pantone 200 C
CMYK: 0-100-63-12
Matthews Paint: MP00239
3M Scotchlite: Reflective Graphic Film 680-82 "Ruby Red"

Metro Safety Yellow

Pantone 116 C
CMYK: 0-16-100-0
Matthews Paint: MP00127
3M Gerber 280i Reflective Vinyl, "Lemon Yellow"
3M Controltac:

Metro Information

Pantone 2945 C
CMYK: 100-57-0-2
Matthews Paint: MP00911
3M Scotchlite:
3M Controltac:

Metro Bus

Metro Local Poppy

Pantone 158 C
CMYK: 0-60-80-0
Matthews Paint: MP00176
3M Scotchlite:
3M Controltac:

Metro Rapid Red

Pantone 193 C
CMYK: 0-100-80-10
Matthews Paint: MP18644
3M Gerber 280i Reflective Vinyl, "Ruby Red"

Metro Express Blue

Pantone 286 C
CMYK: 100-70-0-0
Matthews Paint: MP00352
3M Scotchlite:
3M Controltac:

Metro Liner Silver

Pantone 8401 C (Metallic)
CMYK: 0-0-0-50
Matthews Paint: MP21194
Centary 6000 Dark Silver Standard (2004.12.07)
3M Scotchlite:
3M Controltac:

Color Palette continued

Manufacturer Information

A The Pantone Matching System
Pantone, Inc.
590 Commerce Boulevard
Carlstadt NJ 07072
Tel 201.935.5500

B Matthews Acrylic Polyurethane
MPC / Matthews Paint
8201 100th Street
Pleasant Prairie WI 53158
Tel 800.323.6593

C 3M Controltac Plus & Scotchlite Plus Films
Commercial Graphics Division
3M Center
St. Paul MN 33220
Tel 800.374.6772

Metro Bus continued

Bus fleet Silver

Pantone 877 C (Metallic)
CMYK: 0-0-0-30
Matthews Paint:
MP20934
Centary 6000 Light Silver
Standard (2004.12.07)
3M Scotchlite:
3M Controltac:

Metro Rail

Metro Rail Red

Pantone 185 C
CMYK: 0-100-100-0
Matthews Paint:
MP00224
3M Gerber 280i
Reflective Red Vinyl

Metro Rail Purple

Pantone 2582 C
CMYK: 40-75-0-0
Matthews Paint:
MP00881
3M Scotchlite:
3M Controltac:

Metro Rail Blue

Pantone 285 C
CMYK: 100-50-0-0
Matthews Paint:
MP00351
Translucent paint on
3M Gerber 280i White
Reflective Vinyl

Metro Rail Green

Pantone 360 C
CMYK: 60-0-80-0
Matthews Paint:
MP00468
3M Scotchlite:
3M Controltac:

Metro Rail Gold

Pantone 130 C
CMYK: 0-30-100-0
Matthews Paint:
MP00141
3M Scotchlite: 680-71
Reflective Yellow Vinyl
3M Controltac:

Metro Rail Expo

Pantone 2995 C
CMYK: 50-5-25-0
Matthews Paint:
MP67728
Translucent paint on
3M Gerber 280i White
Reflective Vinyl
3M Controltac:

Color Palette continued

Metro Transitway

Metro Transitway Orange

Pantone 1655 C
CMYK: 0-65-100-0
Matthews Paint: MP00197
3M Gerber HP Series 280i Reflective "Orange"
Digital print to match on 3M Gerber 220 White Non-Reflective Vinyl

Metro Transitway Silver

Pantone 7543 C
CMYK: 7-0-0-30
Matthews Paint: MP03076
3M Scotchcal: Gerber HP Series 220/225 Traffic Grey
3M Controltac:

Metro Amenities

Metro Street Furniture

Pantone C
CMYK: 0-0-0-0
Matthews Paint: MP41342SP Brushed Aluminum
3M Scotchlite:
3M Controltac:

Metro Facility Primary

Pantone C
CMYK: 0-0-0-0
Matthews Paint: MP07425 Satin
3M Scotchlite:
3M Controltac:

Metro Facility Secondary (Warm)

Pantone C
CMYK: 0-0-0-0
Matthews Paint: MP03849 Satin
3M Scotchlite:
3M Controltac:

Metro Facility Secondary (Cool)

Pantone C
CMYK: 0-0-0-0
Matthews Paint: MP05044 Satin
3M Scotchlite:
3M Controltac:

Fonts

In addition to the logo, the typography Metro uses is a fundamental element in maintaining a clear graphic identity.

The typefaces (fonts) that Metro uses for all communication are the result of a great deal of research and deliberation. The two typefaces, DIN and Scala Sans, reinforce Metro's image as efficient, accessible, and professional.

All Metro informational signage, maps and timetables use DIN, a font developed for the specific purpose of conveying information with high legibility.

DIN-Bold is used for primary headers on a sign and DIN-Medium or Regular for secondary messages. All text is flush left, without forced justification.

The Scala Sans font family reflects our honesty while hinting at our warm, friendly personality. Only used for station identification on canopies or primary signs.

Scala Sans is available in a variety of weights. For signage, Scala Sans Bold is used for primary station identification on overhead signs, walls, and platforms. Metro advertising, official written correspondence and materials all use Scala or Scala Sans as the text font. Ⓜ

Scala Sans Bold

SCALA SANS BOLD 36pt.

DIN Bold

DIN BOLD 36pt.

DIN Medium

DIN Medium 36pt.

DIN Regular

DIN Regular 36pt.

Letterspacing

Letterspacing should be optically consistent with existing Metro signage.

Under no circumstances should the width or propotions of lettering be manipulated to "fit" layouts or signage. Ⓜ

Letterspacing Guide/Scala Sans Bold

SCALA SANS BOLD 18pt.

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

0123456789

Letterspacing continued

Letterspacing Guide/DIN Bold

DIN BOLD 18pt.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

Letterspacing Guide/DIN Medium

DIN BOLD 18pt.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

Letterspacing Guide/DIN Regular

DIN BOLD 18pt.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

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Cap Height Requirement

This diagram illustrates the distance at which certain sizes of lettering can be read by the average person with average eyesight.

The US Department of Transportation (DOT) recommends a 1" cap height for every 50' of viewing distance for optimal visibility.

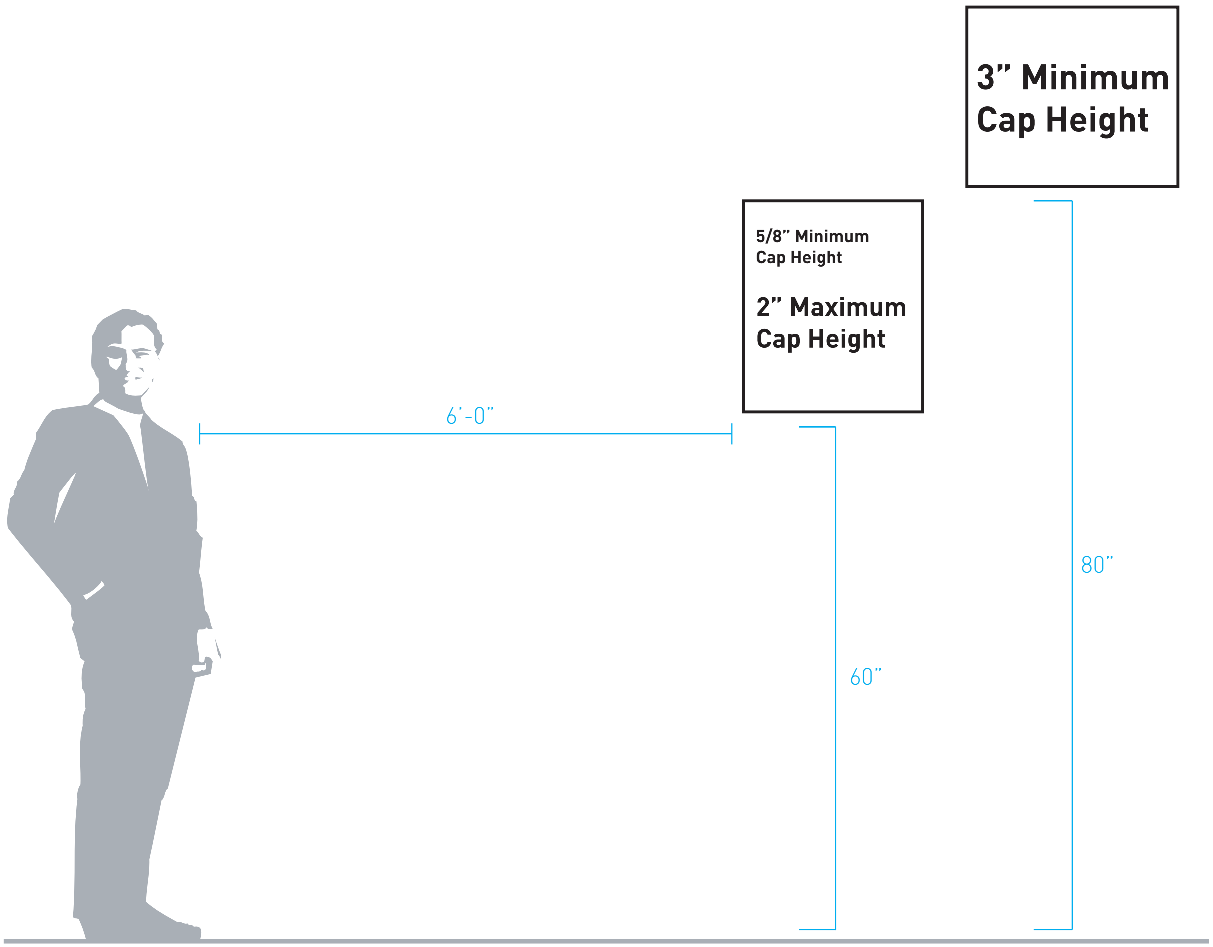
Signage must take many variables into account.

Architectural features, lighting conditions, material choices, and other circumstances may affect the size of lettering that can be effectively used.

For design review and clarification, please contact Metro Creative Services. Ⓜ

References

♿	Refer to Federal ADA guidelines for the most up-to-date information on cap height/legibility requirements, and California Title 24 requirements.



Cap Height Conversion Chart

The following table specifies the font equivalent (in points) for both Metro fonts, DIN and Scala Sans. Ⓜ

References

♿ 5/8” minimum cap height requirement for all tactile/braille signs

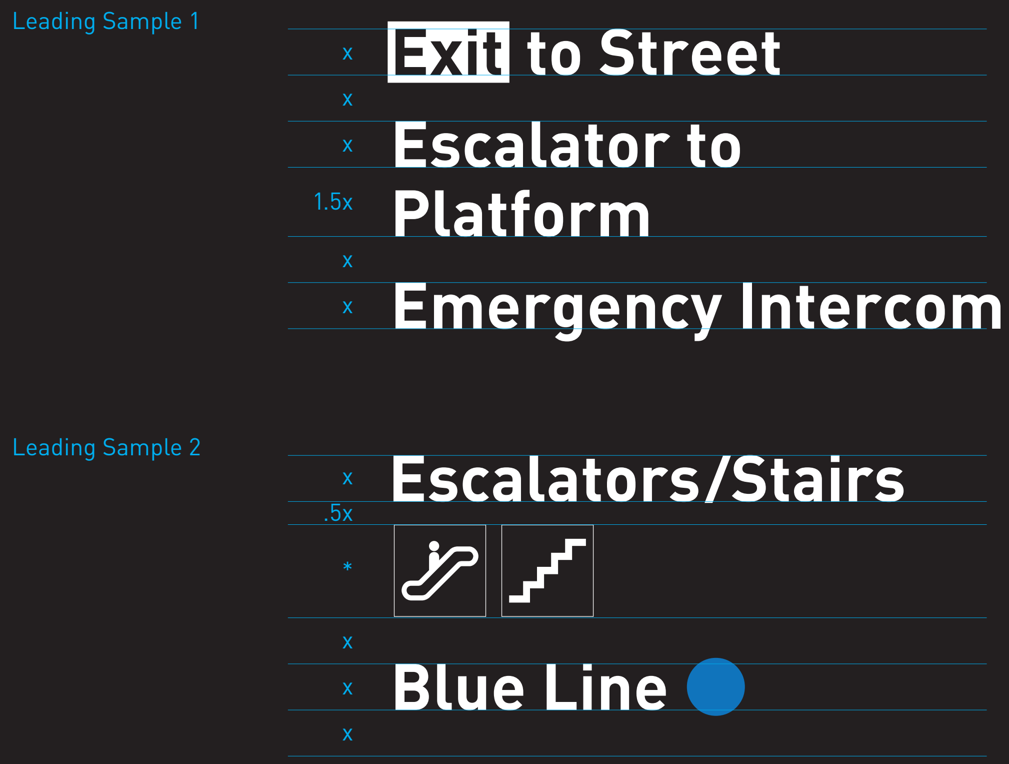
For additional information regarding signage, please refer to the Federal ADA Accessibility Guidelines and California Title 24 requirements.

Cap Height	Din (pt)	Scala Sans (pt)	Leading	Space After Paragraph
.25"	25.28pt		27	9
.5"	50.65pt		54	18
.625"	63.5pt	68.125pt	67.5	22.5
.75"	75.84pt		81	27
1"	101.12pt	109.09pt	108	36
1.25"	126.41pt	136.4pt	135	45
1.5"	151.69pt	163.63pt	162	54
1.75"	176.97pt		189	63
2"	202pt	218.18pt	216	72
2.25"	227.52pt		243	81
2.5"	252.81pt		270	90
2.75"	278.09pt	300pt	297	99
3"	303.375pt	327pt	324	108
3.5"	353.93pt		378	126
4"	404.5pt	436.35pt	432	144
4.5"	455.05pt		486	162
5"	505.65pt	545.5pt	540	180
5.5"	556.25pt		594	198
6"	606.75pt	654.6pt	648	216
6.5"	657.3pt		702	234
7"	707.87pt	763.7pt	756	252
7.5"	758.42pt		810	270
8"	808.99pt	872.8pt	864	288
8.5"	859.56pt		918	306
9"	910.11pt		972	324
10"	1011.24pt		1080	360
11"	1112.36pt		1188	396
12"	1213.48pt		1296	432

Leading/Line Spacing

Line spacing is based on the height of the upper case letter “x.” One x is the standard minimum between two lines of information. 1.5x is used to separate lines when one piece of information spans multiple lines.

In the case of overhead signs, where cap heights can exceed 3”, one may increase multiple line information from 1.5x to 1.75x if legibility is a concern. This adjustment must be approved by Metro Creative Services.


Leading Sample 1
x
Exit to Street
x
x
Escalator to
1.5x
Platform
x
x
Emergency Intercom
Leading Sample 2
x
Escalators/Stairs
.5x
*
x
x
Blue Line
x

In both examples above, x = cap height;
Cap height is measured by Uppercase X

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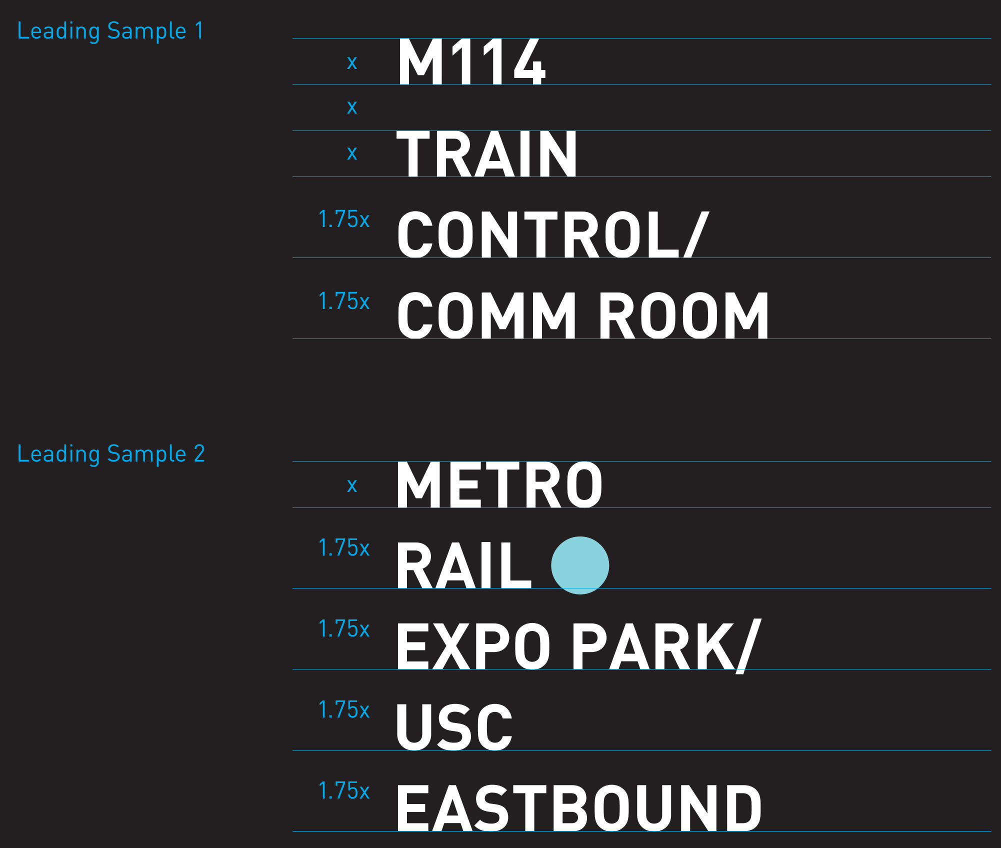
Leading/Line Spacing

Tactile/Braille signs require the use of all capital letters for CalDAG compliance. Use the DIN Bold font for all text in tactile/braille signs.

Line spacing is based on the height of the upper case letter “x.” One x is the standard minimum between two lines of information. 1.75x is used to separate lines when one piece of information spans multiple lines. Ⓜ

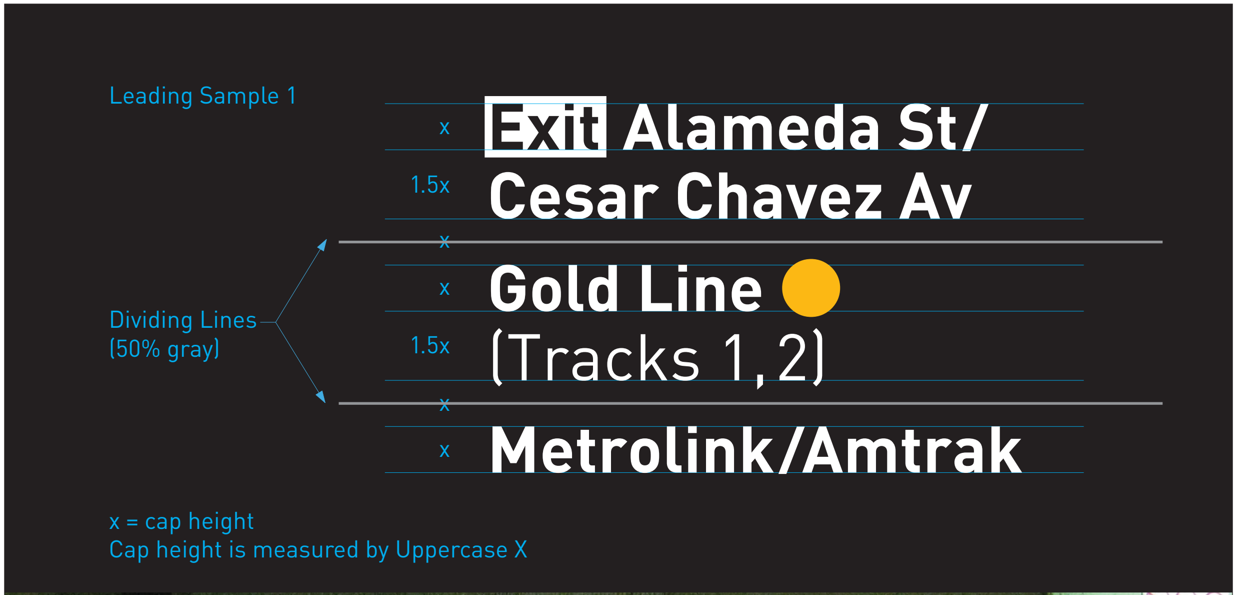

Leading Sample 1
x
M114
x
x
TRAIN
1.75x
CONTROL/
1.75x
COMM ROOM
Leading Sample 2
x
METRO
1.75x
RAIL
1.75x
EXPO PARK/
1.75x
USC
1.75x
EASTBOUND

In both examples above, x = cap height;
Cap height is measured by Uppercase X

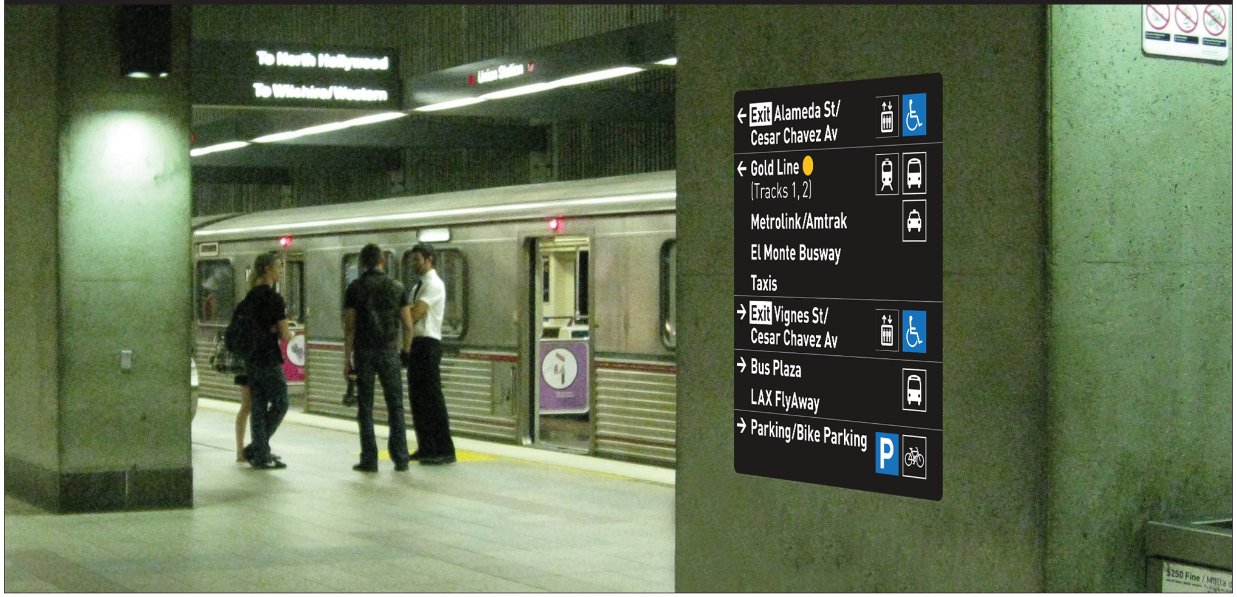
Leading/Dividing Lines

DIN: Line spacing is based on the height of the upper case letter “x.” One x is the standard minimum between two lines of information. 1.5x is used to separate lines when one piece of information spans multiple lines.

Wayfinding signs that require an unusual amount of content may be divided into categories for easy reading. Categories are separated using a keyline across the entire sign. The keyline is a 50% K (black) stroke.


Leading Sample 1
x
Exit Alameda St/
1.5x
Cesar Chavez Av
x
x
Gold Line ●
1.5x
(Tracks 1, 2)
x
x
Metrolink/Amtrak
Dividing Lines
(50% gray)

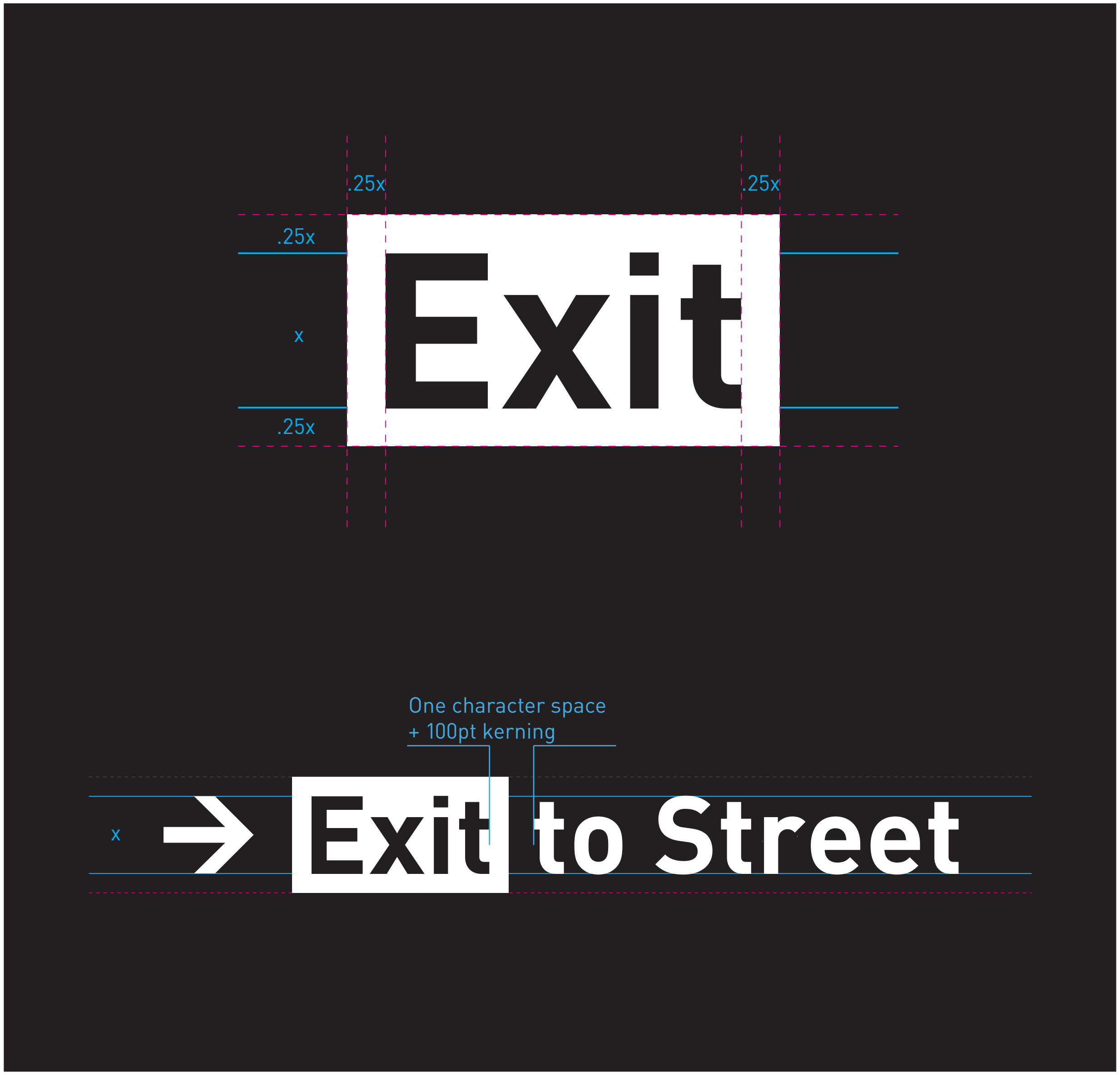
x = cap height
Cap height is measured by Uppercase X


Exit Alameda St/
Cesar Chavez Av
Gold Line
(Tracks 1, 2)
Metrolink/Amtrak
El Monte Busway
Taxis
Exit Vignes St/
Cesar Chavez Av
Bus Plaza
LAX FlyAway
Parking/Bike Parking
P

Exit Graphic

Exit signs differ from other signage in that they depict text dropped out of a contrasting background. The example to the left shows black text dropped out of a white field on a standard black sign.

The use of the contrasting field gives Metro riders a quick and consistant method for recognizing the way out.


.25x
.25x
.25x
x
.25x
Exit
One character space
+ 100pt kerning
x
→
Exit to Street

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Service Symbols

Metro's transit system relies on a series of colored symbols and pictograms that help convey additonal information to transit riders.

Metro's symbols and pictograms can be grouped into three main categories:

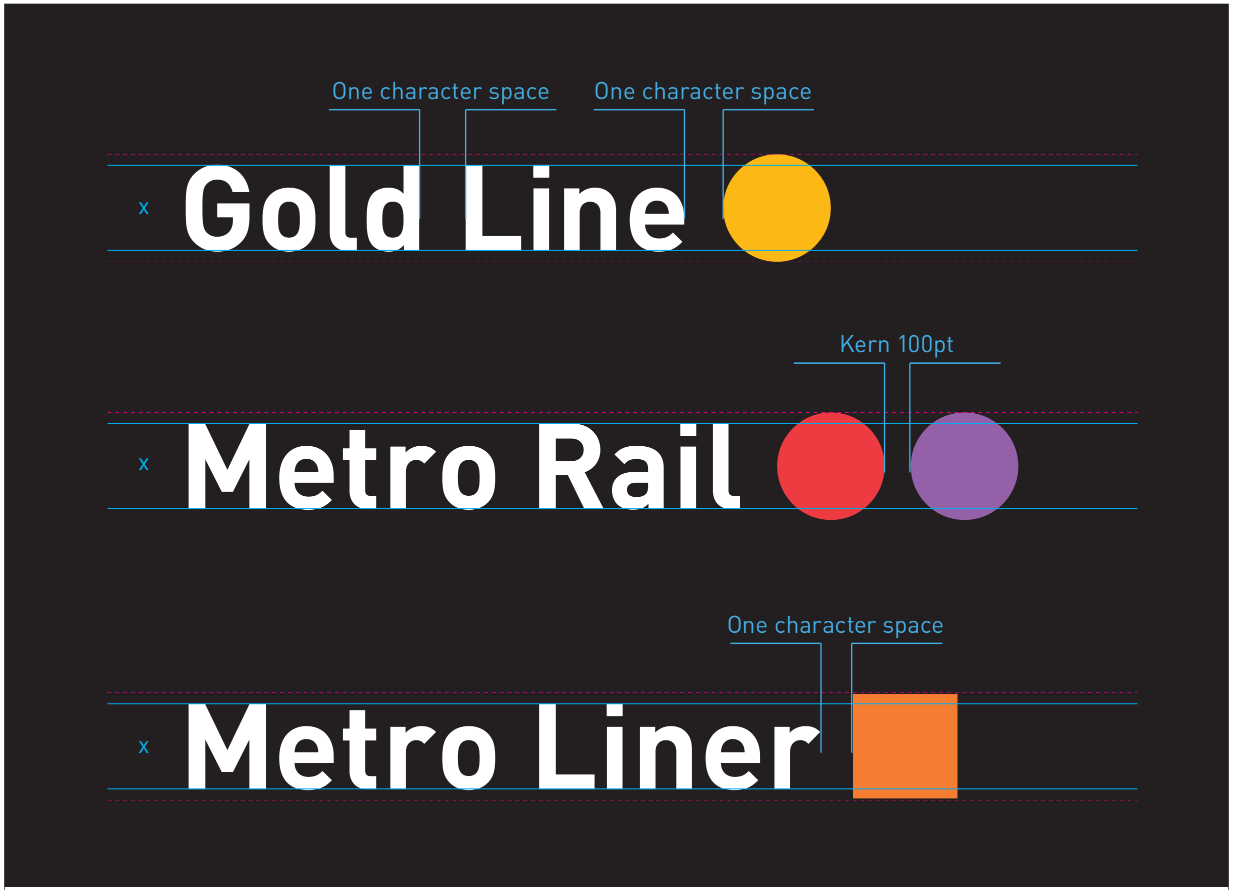
Safety symbols. These symbols communicate key safety messages to riders and must conform to all juristictional requirements. Background, color, and specific shapes are used to communicate their importance.

Network symbols. These symbols, made up of simple geometic shapes, should always be displayed in the correct color, helping direct riders to connecting services and lines. Connections to other agencies' services are not part of this language.

Pictograms. These symbols help clarify directions for non-English speakers and symbolically represent services and behaviors that maintain efficiency and safety on Metro.

Icons. Metro has developed a custom symbolic language of icons that are found throughout the system. Like pictograms, they can reinforce written message, but they are proprietary to Metro.

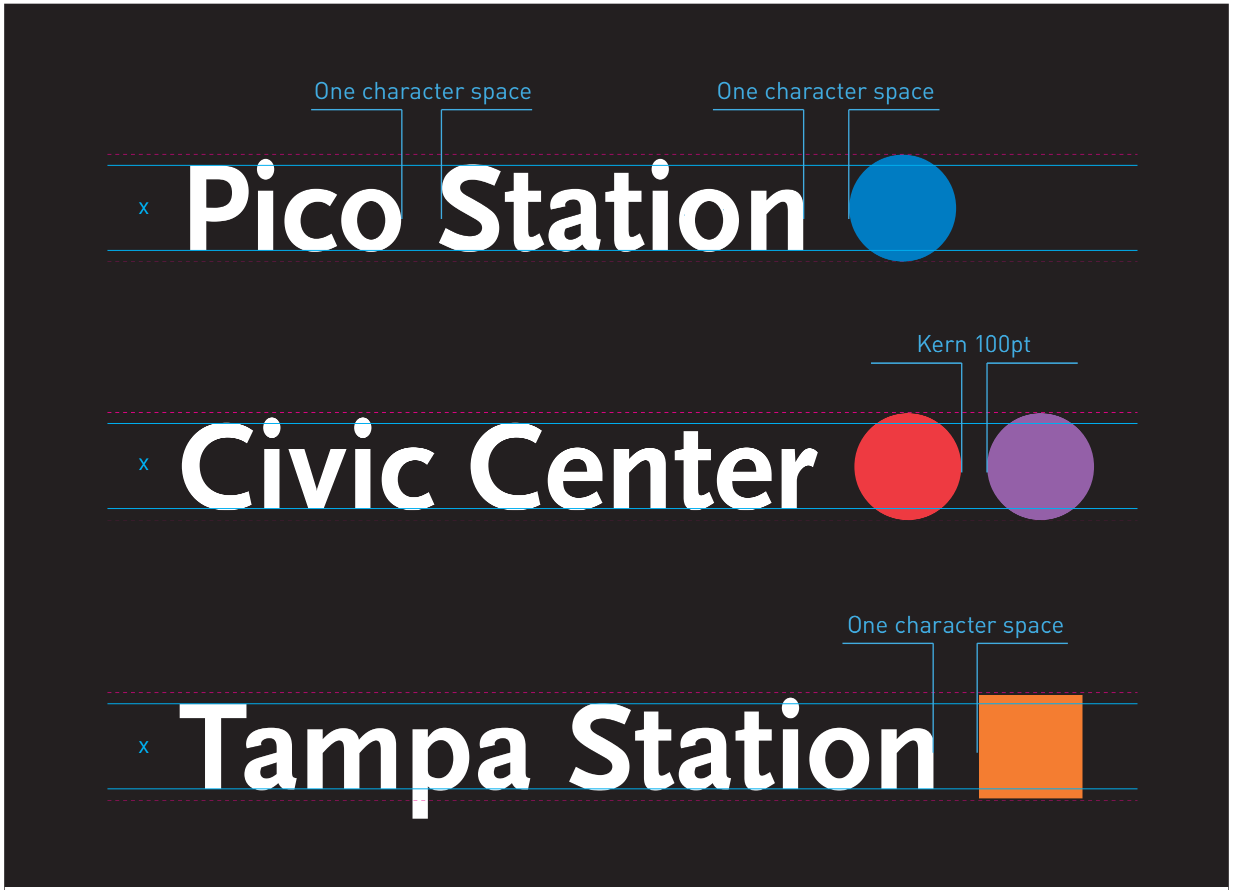
The illustrations on this and the next page outline the method for providing clear and consistent service symbols.



DIN Bold + Zapf Dingbats (solid dot or square)

Formula:
Cap height = x (Cap height is measured by Uppercase X)
Dot/Square = 125% (horizontal/vertical scale in Illustrator Character menu);
Baseline shift = x (in pts) * -.075 (calculate in baseline shift box in Illustrator Character menu)

Service Symbols continued


One character space
One character space
x
Pico Station
Kern 100pt
x
Civic Center
One character space
x
Tampa Station

Scala Sans Bold + Zapf Dingbats (solid dot or square)

Formula:
Cap height = x (Cap height is measured by Uppercase X)
Dot/Square = 116.5% (horizontal/vertical scale in Illustrator Character menu);
Baseline shift = x (in pts) * -.075 (calculate in baseline shift box in Illustrator Character menu)

Universal Pictograms

The illustration on this page shows some of the universal pictograms used by Metro. Note the order and proportions of the symbols shown.

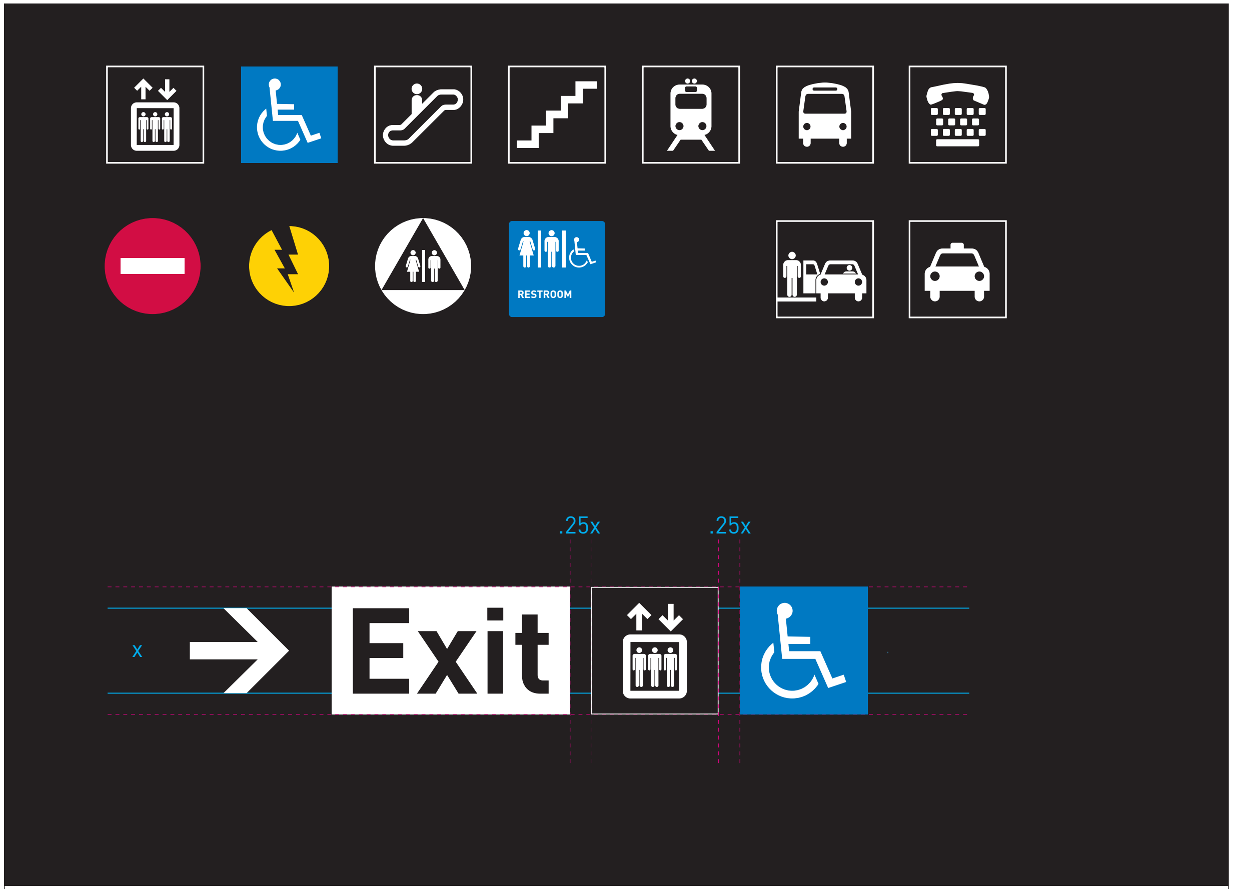
Pictograms are important assets in communicating with Metro's riders. Artwork should be consistant at all times.

Digital files of approved versions of the Metro pictograms may be found at *metro.net/xxxxx* or by contacting:

☎ Kim Bueno
Senior Public Arts Officer

Metro
One Gateway Plaza
Mail Stop 99-19-1
Los Angeles CA 90012-2952

213.922.7695 (phone)
213.922.2719 (fax)
buenok@metro.net



Minimum spacing between symbols = 1/4 of x.
Larger signs may require spacing to be adjusted.
Metro Creative Services to review and approve any adjustments made to our standards.

Metro Icons

The illustration on this page shows some of the custom iconogrpahy developed by Metro for use within our transit system. This is by no means an exhaustive catalog.

Icons play an important role in communicating with Metro's riders. This is a proprietary asset and is central to the success of Metro's award-winning public communication system.

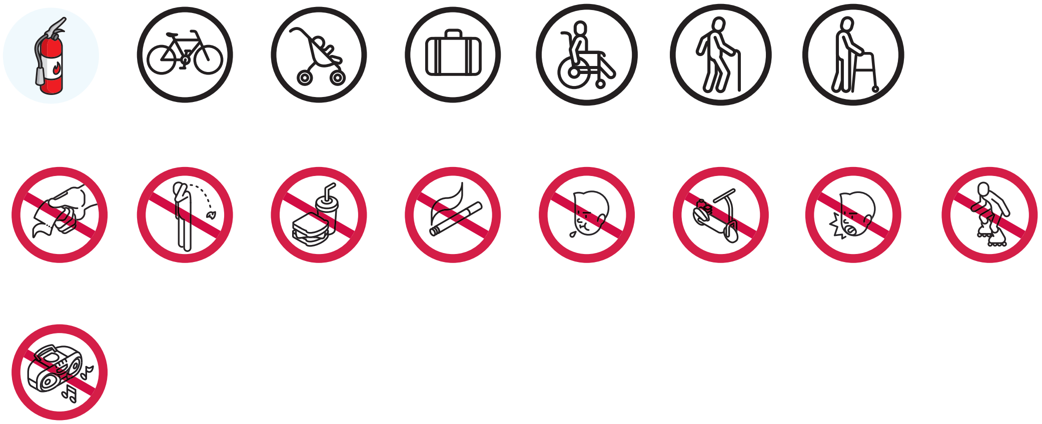
New icons are being developed all the time. At this time, all new icons must be developed by Metro Creative Services to maintain consistency.

Digital files of approved versions of the Metro icons may be requested by contacting:

☎ Kim Bueno
Signage Project Manager

Metro
One Gateway Plaza
Mail Stop 99-19-1
Los Angeles CA 90012-2952

213.922.7695 (phone)
213.922.2719 (fax)
buenok@metro.net



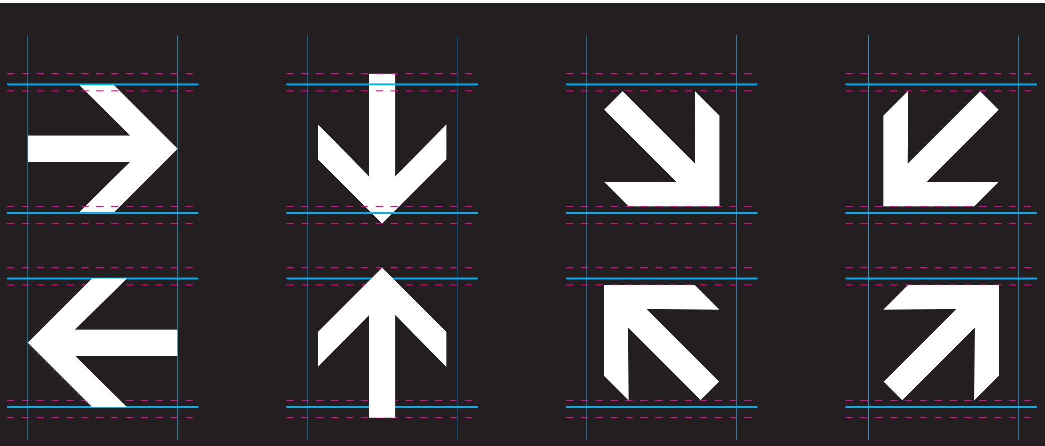
Wayfinding Arrows

Arrows should be placed to the left of the text on signage, centered as indicated and set off from the text as shown.

Where a sign carries several messages of equal importance in the same direction, an arrow on the first line only should be used.

Where one sign message is subordinate to another and is in a smaller size of lettering, an arrow should be included only with the main message.

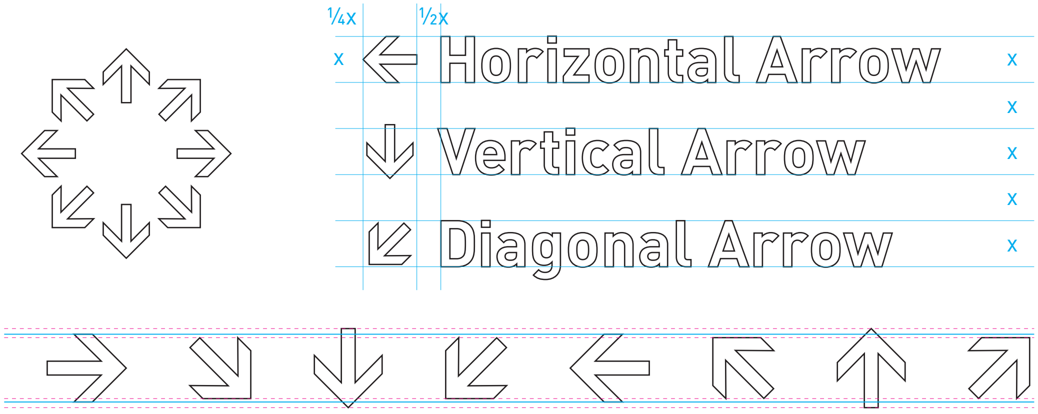
Overhead directional signage, such as signage on platforms, may show arrows placed to the right of the destination if the direction to that destination is to the right. These arrows will typically replace the arrows to the left of the text. It will be set off from the text by 1/2x.



Horizontal arrow height = x, cap height

Vertical arrow is centered horizontally and vertically

Diagonal arrow is centered horizontally and vertically



x = cap height; Cap height is measured by Uppercase X

Metro Amenities

9.0

Chinatown
Chinatown
Chinatown
Chinatown
Chinatown
How to Ride Cómo viajar en Metro
Station Name Connections
Go Metro
Bus and Rail System
12-Minute Map
Metro

VERSION 1: February 27, 2012 10:40 AM
METRO SIGNAGE STANDARDS ©2012 LACMTA

Mapcase Criteria - Metro Rail & Bus

Underground Stations

> Main entry: 5 Single-sided or 3 Double-sided

> Elevator entry: 3 Single-sided

> Mezzanine (Non-paid fare areas): 5 Wall-mounted

> Mezzanine (Paid fare areas): 1 or 2 groups of 3 wall-mounted, depending on configuration

> Platforms
Heavy Rail - Minimum of 6 displays; generally a mixture of single-sided and double-sided depending on layout

Light Rail - Minimum of 4 displays; generally a mixture of single-sided and double-sided depending on layout

> Off-Site Locations: Each station layout must be evaluated individually with Metro staff early in the planning process

Aerial Stations

> Main entry: 5 Single-sided or 3 Double-sided

> Elevator entry: 3 Single-sided

> Mezzanine: Each station layout must be evaluated individually with Metro staff early in the planning process

> Platforms: Minimum of 3 double-sided displays

> Off-Site Locations: Each station layout must be evaluated individually with Metro staff early in the planning process

At-Grade Stations (Center Platform, One Station Entry)

> Minimum of 6 displays

> Entry: Minimum of 2 single-sided, can be more depending on configuration

> Platforms: 2 double-sided mapcases

> Off-Site Locations: Each station layout must be evaluated individually with Metro staff early in the planning process

At-Grade Stations (Center Platform, Two Station Entries)

> Minimum of 8 displays

> Entries: Minimum of 2 single-sided at each entry; can be more depending on configuration

> Platforms: 2 double-sided mapcases

> Off-Site Locations: Each station layout must be evaluated individually with Metro staff early in the planning process

At-Grade Stations (Split Platform, One Station Entry)

> Minimum of 6 displays

> Entry: Minimum of 2 single-sided, can be more depending on configuration

> Platforms: 4 single-sided mapcases

> Off-Site Locations: Each station layout must be evaluated individually with Metro staff early in the planning process

At-Grade Stations (Split Platform, Two Station Entries)

> Minimum of 8 displays

> Entries: Minimum of 2 single-sided at each entry; can be more depending on configuration

> Platforms: 2 single-sided mapcases on each platform (4 total)

> Off-Site Locations: Each station layout must be evaluated individually with Metro staff early in the planning process

Major Bus Stations/Facilities

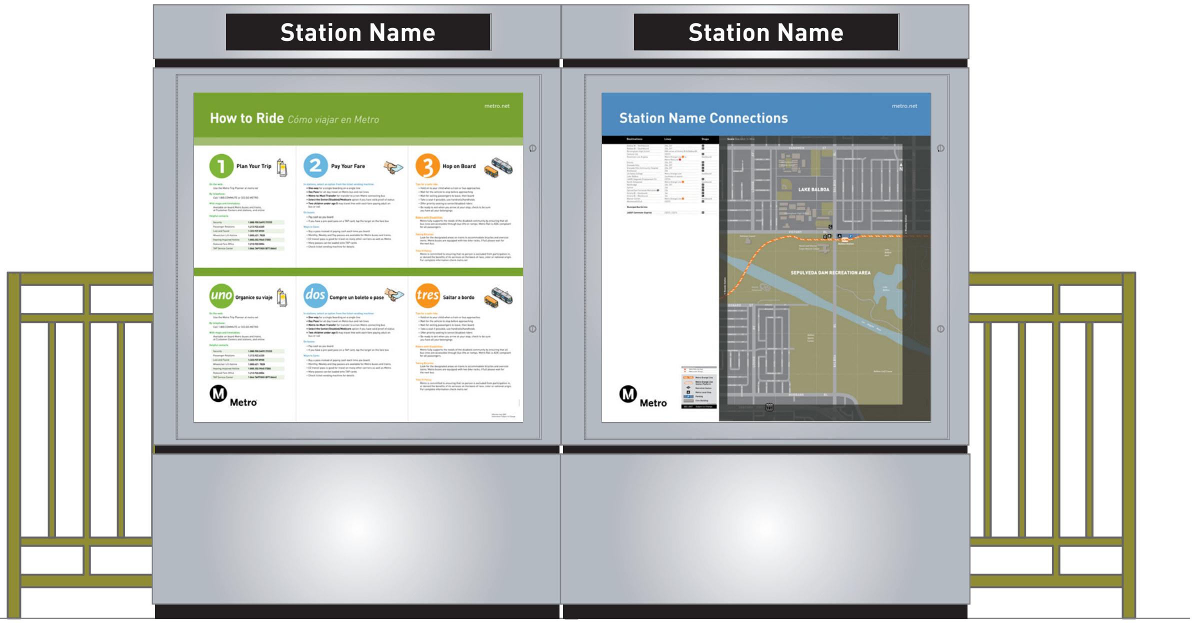
> Since there is no standard bus facility design, each situation must be evaluated individually with Metro staff early in the planning process

Mapcase Types	Wall-Mounted Mapcase	Single-Sided, Free-Standing Mapcase	Double-Sided, Free-Standing Mapcase
Underground Station			
Main Entry (Option A)	5		
Main Entry (Option B)			3
Elevator Entry	3		
Concourse Level (Non-Paid Area)	5		
Concourse Level (Paid Area)	3 (1 or 2 groups)		
Platform Level Heavy Rail (Center Platform)			3
Platform Level Light Rail (Center Platform)			2
Off-Site	Subject to evaluation with Metro Staff.		

Mapcase Types	Wall-Mounted Mapcase	Single-Sided, Free-Standing Mapcase	Double-Sided, Free-Standing Mapcase
Aerial Station			
Main Entry (Option A)	5		
Main Entry (Option B)			3
Elevator Entry	3		
Concourse Level (Non-Paid Area)	Subject to evaluation with Metro Staff.		
Concourse Level (Paid Area)	Subject to evaluation with Metro Staff.		
Platform Level (Center Platform)			3
Off-Site	Subject to evaluation with Metro Staff.		

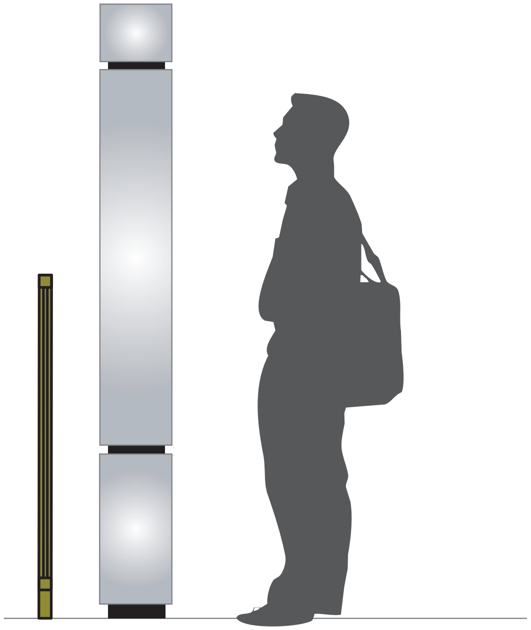
Mapcase Types	Wall-Mounted Mapcase	Single-Sided, Free-Standing Mapcase	Double-Sided, Free-Standing Mapcase
At-Grade Station (Center Platform)			
Each Main Entry		2	
Center Platform			2
Off-Site	Subject to evaluation with Metro Staff.		
At-Grade Station (Split Platform)			
Each Main Entry		2	
Each Split Platform		4	
Off-Site	Subject to evaluation with Metro Staff.		

Single-sided, Free-Standing Mapcase(s)


Station Name
Station Name
How to Ride Cómo viajar en Metro
metro.net
1 Plan Your Trip
2 Pay Your Fare
3 Hop on Board
uno Organice su viaje
dos Compre un boleto o pase
tres Subir a bordo
Metro
Station Name Connections
metro.net
LAKE BALBOA
SEPULVEDA DAM RECREATION AREA
Metro

SINGLE-SIDED (Two shown above)

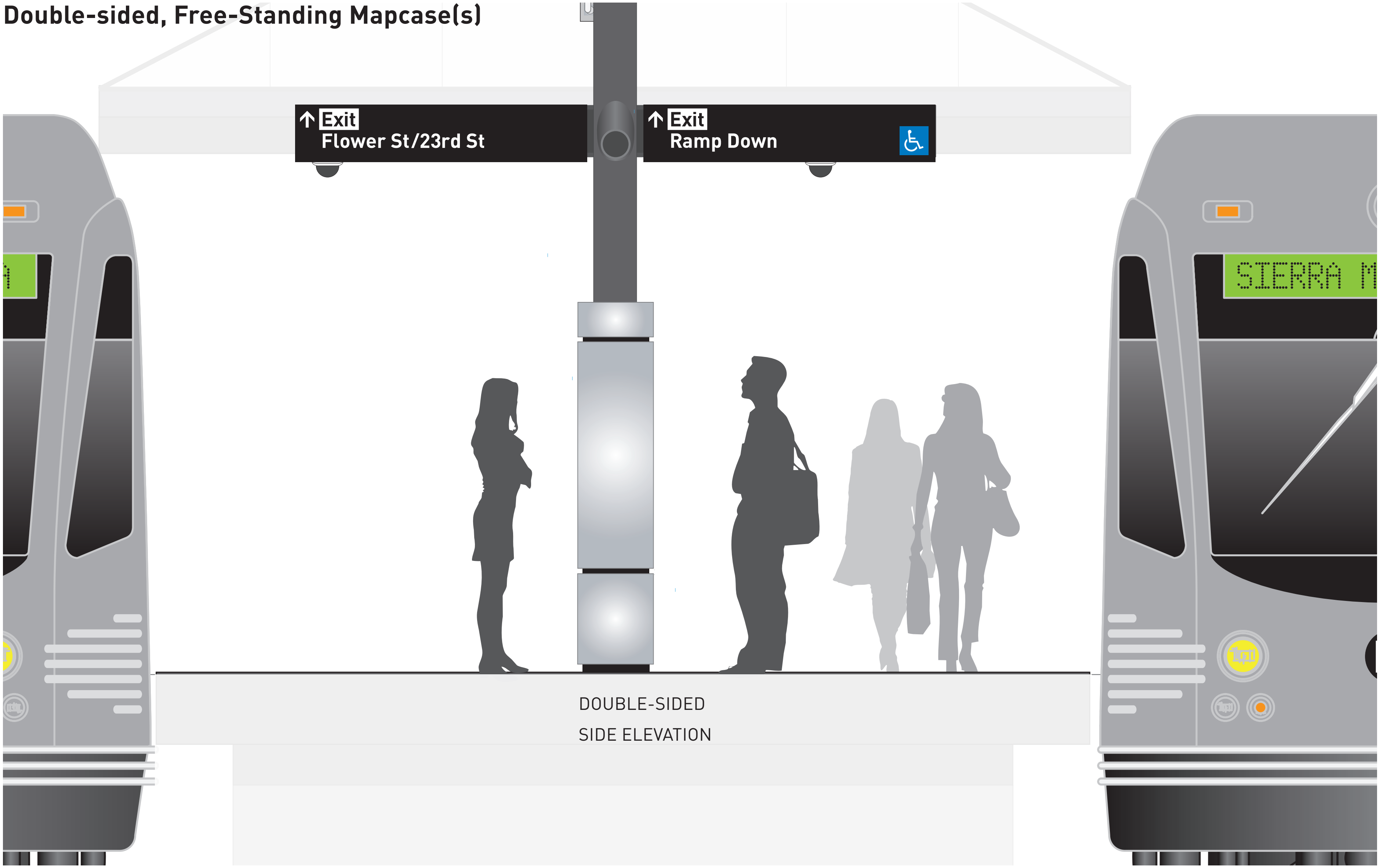
FRONT ELEVATION



SINGLE-SIDED

SIDE ELEVATION

Double-sided, Free-Standing Mapcase(s)


↑ Exit
Flower St/23rd St
↑ Exit
Ramp Down
SIERRA M
DOUBLE-SIDED
SIDE ELEVATION

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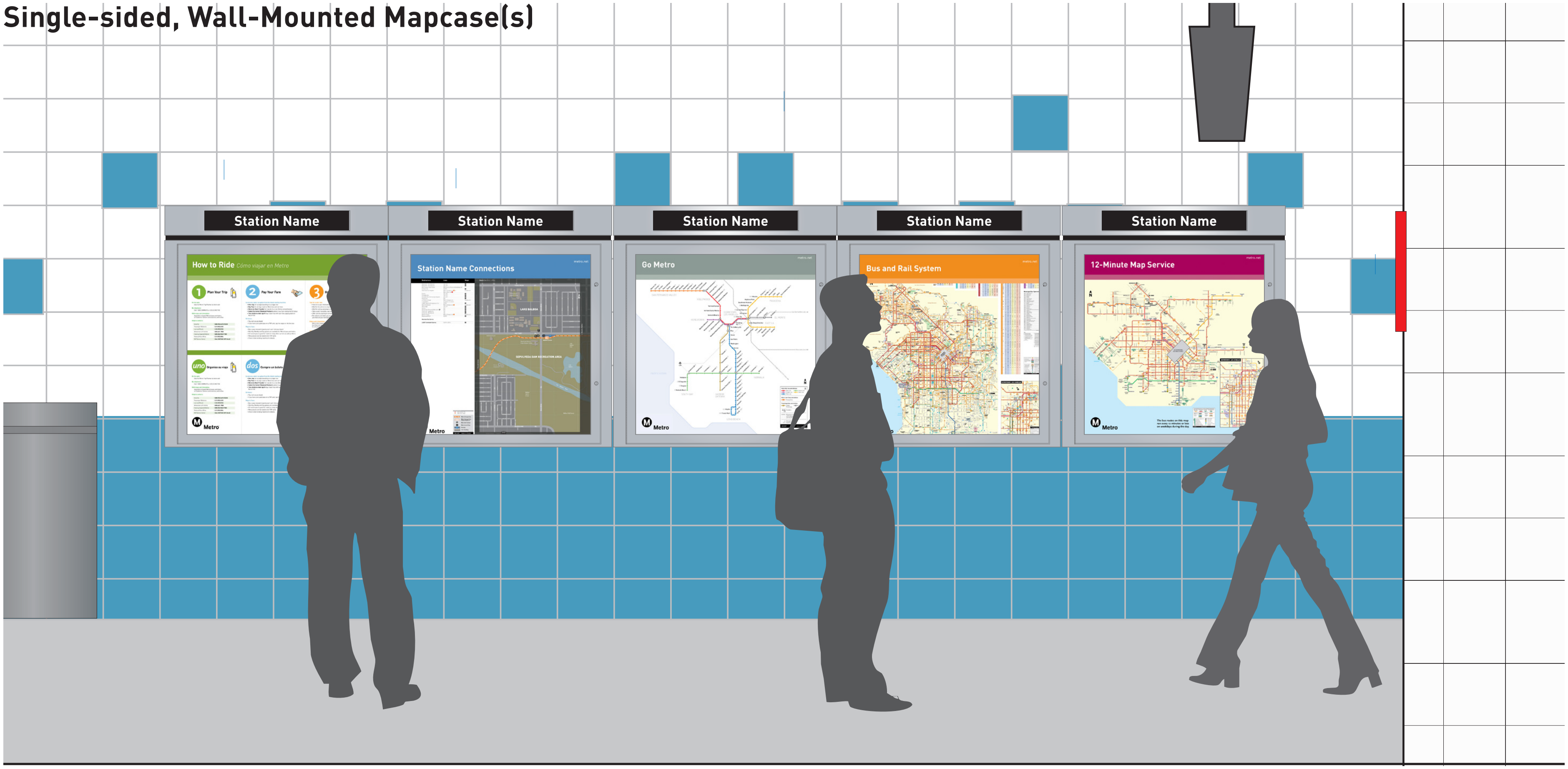
Single-sided, Wall-Mounted Mapcase(s)


Station Name
Station Name
Station Name
Station Name
Station Name
How to Ride Cómo viajar en Metro
Station Name Connections
Go Metro
Bus and Rail System
12-Minute Map Service
Metro

SINGLE-SIDED INFO WALL (Five shown above)

FRONT ELEVATION

VERSION 1: February 27, 2012 10:40 AM

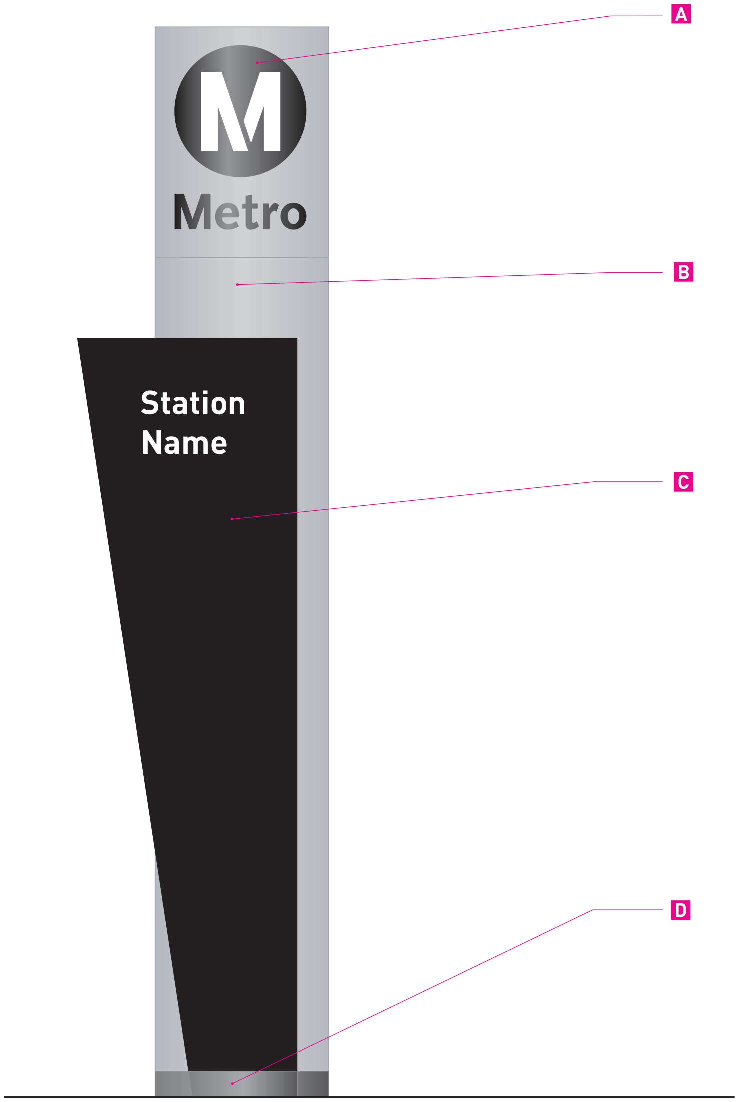
Metro Grand Pylon

The Metro Grand Pylon is a station identification sign for Metro Rail lines and select bus facilities.

The Metro Grand Pylon should include the station name, and the “blade” of the pylon should be painted in the color established for the Metro service it identifies. The orientation of the pylon shall be determined after review by Metro Creative Services staff.

Full construction drawings of a typical Metro Grand Pylon are available. Before fabrication, all designs must be submitted to Metro Creative Services for review and approval.

There shall be a minimum of one Metro Grand Pylon per entrance. On occasion, given station layout and entries, this is the need for two Grand Pylon markers per station. Placement of the Grand Pylons shall be visible at least two cross streets or roads bisecting he station entrance, so that passengers will recognize and locate the entrance on approach by foot or vehicle. Grand Pylon(s) shall be located so as not to obstruct the view of the motorist and train or bus operator Ⓜ



A

M Logo
20 7/8” Dia. at 1/4” thick white acrylic push-thru with 3M perforated black vinyl (220/225-22).
12 5/8” letter at 1/2” thick opaque black acrylic push-thru painted white (Mathews).
Internally illuminated via neon w/120 volt ventex electronic transformer.

B

Pylon Face
11 gauge stainless steel w/#4 brushed vertical finish.
2” X 2” Steel angle frame with painted finish (Matthews).

C

Pylon Pan
10 gauge aluminum with water jet cut type, and painted finish (Matthews).
Internally illuminated via neon w/120 volt ventex electronic transformer.
1/4” white acrylic push-thru type.

D

Base
5” Polished cold springs black granite.

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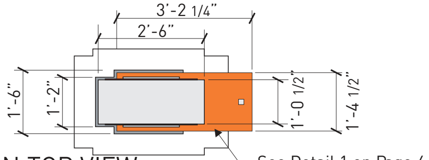
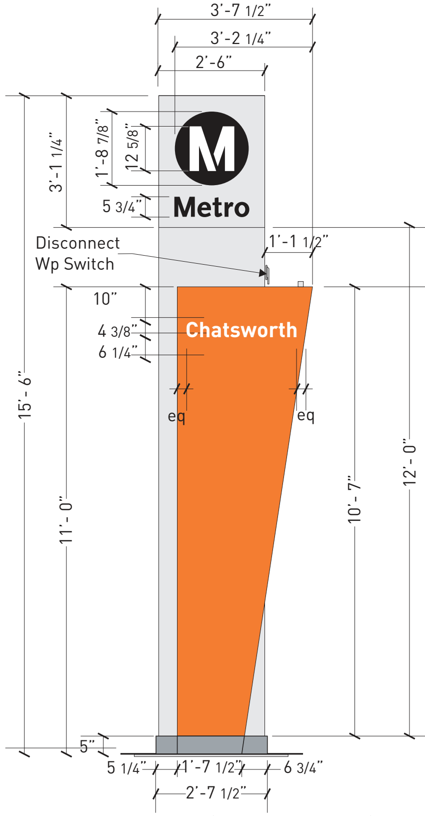

3'-2 1/4"
2'-6"
1'-6"
1'-2"
1'-0 1/2"
1'-4 1/2"
See Detail 1 on Page 4

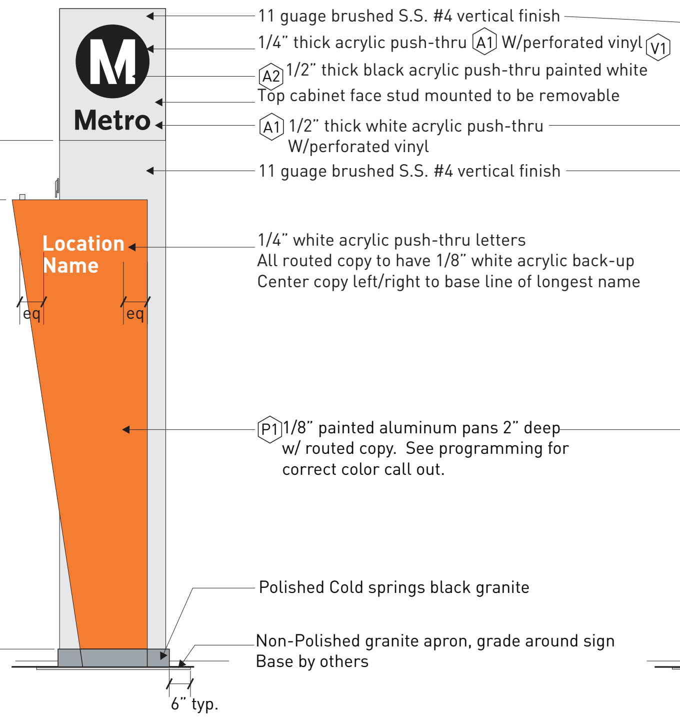
1/1 D/F PYLON SIGN TOP VIEW
SCALE: 3/8" = 1'-0"

NOTE:
ALL REMOVABLE PANELS TO BE ATTACHED WITH S.S. TORX FLAT HEAD SCREWS #10 X 3/4"

GENERAL SPECIFICATIONS:
1) All Structural Steel shall conform to ASTM A-36
2) TS shall conform to ASTM A-500 Grade B
3) Bolts shall conform to ASTM A-307
4) Field welding to be performed by welders certified
By the City of Los Angeles.
5)Joints between structural memebers shall be
Bolted or welded as follows:
*1/2 dia. Bolt or 2 lineal inches 3/16" fillet weld
*5/8 dia. Bolt or 2 lineal inches 1/4" fillet weld
*3/4 dia. Bolt or 3 lineal inches 1/4" fillet weld
6) All concrete shall be class 4000 psi for drilled pier.
7) Reinforcing steel shall be deformed steel conforming
to ASTMA-615 GRADE 60


3'-7 1/2"
3'-2 1/4"
2'-6"
3'-1 1/4"
1'-8 7/8"
12 5/8"
5 3/4"
Metro
Disconnect
Wp Switch
1'-1 1/2"
10"
4 3/8"
6 1/4"
Chatsworth
eq
eq
15'- 6"
11'- 0"
10'- 7"
12'- 0"
5"
5 1/4"
1'-7 1/2"
6 3/4"
2'-7 1/2"

2/1 D/F PYLON SIGN FACE "A" (FRONT ELEV.)
SCALE: 3/8" = 1'-0"


Metro
Location
Name
eq
eq
6" typ.

11 guage brushed S.S. #4 vertical finish

1/4" thick acrylic push-thru A1 W/perforated vinyl V1

A2 1/2" thick black acrylic push-thru painted white

Top cabinet face stud mounted to be removable

A1 1/2" thick white acrylic push-thru
W/perforated vinyl

11 guage brushed S.S. #4 vertical finish

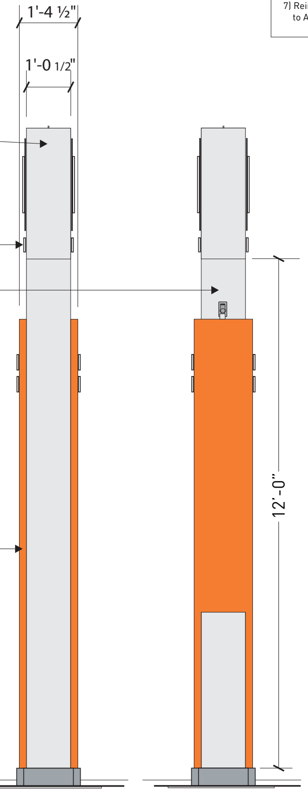
1/4" white acrylic push-thru letters
All routed copy to have 1/8" white acrylic back-up
Center copy left/right to base line of longest name

P1 1/8" painted aluminum pans 2" deep
w/ routed copy. See programming for
correct color call out.

Polished Cold springs black granite

Non-Polished granite apron, grade around sign
Base by others

3/1 D/F PYLON SIGN FACE "B"
SCALE: 3/8" = 1'-0"


1'-4 ½"
1'-0 1/2"
12'- 0"

4/1 D/F PYLON SIGN SIDE VIEW
SCALE: 3/8" = 1'- 0"

3/4" PVC Conduit by others W/ (1) 277V or 120V Circuit (existing) Total Load is: .23A @ 277V

MATERIAL FINISH - PAINT	
P1	Paint t.m. PMS 1655C Orange 🟧 Matthews #MP00197

MATERIAL FINISH - ACRYLIC	
A1	2447 WHITE ACRYLIC
A2	1/2" BLACK OPAQUE ACRYLIC

MATERIAL FINISH -Vinyl	
V1	3M Vinyl 3635-222 black Dual

Metro Materials and Fabrication Standards

10.0

VERSION 1.1: February 27, 2012 1:35 PM

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Sign Fabrication and Installation Details

10

Materials

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Glass 10.1.3
Tactile/Braille Messages 10.1.4
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Fabrication

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Warranties 10.2.5
Maintenance Manual 10.2.6
Finishing Materials 10.2.7
Fabrication of Signs and Supports 10.2.9
Shop Application of Sign Finishes 10.2.11
Graphic Application 10.2.12
Installation 10.2.13
Documentation 10.2.14

Metals

All aluminum, steel, stainless steel, galvanized steel, bronze and resulting signage must be free of warpage, mars, dimples, or any other defects impairing strength, durability, and appearance. Provide dialectic separation of all dissimilar metals which are in contact with one another.

A Aluminum Sheet or Plate
Aluminum sheet and plate shall be the alloy and temper recommended by manufacturer for use intended and as suitable for application of finish indicated, but with not less than the strength and durability properties specified in ASTM B209, 5005-H32 alloy, 1/8” thickness minimum, stretcher leveled and visually flat of best architectural quality.

B Aluminum Extrusions
Aluminum shall be suitable for ornamental, structural or architectural work. Surface finish shall be smooth, free of extrusion marks or imperfections. Alloy shall be selected to meet the structural requirements of the specific application. ASTM B221, 6063-T5 alloy, 1/8” thickness minimum, with high quality extrusion dies to produce minimum of die lines.

C Steel
Structural metal for concealed framing shall be of galvanized rolled steel or approved equal as required to satisfy structural requirements.

Structural metal for concealed framing shall be of galvanized rolled steel or approved equal as required to satisfy structural requirements.

All structural steel must be certified for installation near salt water.

D Stainless Steel
Stainless steel shall be suitable for ornamental and architectural work. Surface finish shall be smooth, free of all imperfections and finished as indicated on drawings. Alloy shall be selected to meet the structural requirements of specific application and comply with AISI Type 302/304, unless otherwise indicated. Sheets and plates shall comply with ASTM A167, AISA Type 302 or 304. No. 4 satin finish, grain running vertically, or other specified finish shall be uniform on face and returns.

E Galvanized Steel
All structural steel supports for signs must be coated with a high quality zinc rich rust inhibitor of a 2 mil DFT thickness or galvanized. Material for galvanizing to be suitable as described in ASTM A 384/385. Steel materials suitable for galvanizing include structural shapes, pipe, sheet, fabrications and assemblies. Refer to ASTM A 123/153 for minimum average coating thickness grades by material category.

F Bronze
Bronze shall be suitable for ornamental and architectural work. Surface finish shall be smooth, free of all imperfections and finished as indicated on drawings. Alloy shall be selected to meet the requirements of specific application and comply with AISI Type 302/304, unless otherwise indicated. Provide clear non-glare lacquer sealer on all bronze where noted. Bronze bar stock shall be Commercial Bronze 316, bronze sheeting shall be Commercial Bronze 220.

Acrylic/Polycarbonate

A Acrylic Sheet
Use Plexiglas II™ as manufactured by AtoHass Americas Inc., Acrylite™ as manufactured by Cyro, or approved equal. Thickness shall be as indicated on drawings or not less than 1/8" thick. Contractor shall provide color and finish samples of all plastics for approval before fabrication; no substitution in color, thickness, or finish of plastics will be accepted without written approval. All plastics shall be of uniform color, translucence and illumination, as supplied by manufacturer. Any exposed edges of acrylic shall be finished so as no saw marks are visible. Edge finish shall be noted on shop drawings.

B Polycarbonate Sheet
Use Lexan™ as manufactured by G.E., Tuffack™ as manufactured by Atofina, or approved equal. Thickness shall be as indicated on drawings or not less than 1/8" thick. Contractor shall provide color and finish samples of all plastics for approval before fabrication; no substitution in color, thickness, or finish of plastics will be accepted without written approval. All plastics shall be of uniform color, translucence and illumination, as supplied by manufacturer. Any exposed edges of polycarbonate shall be finished so as no saw marks are visible. Edge finish shall be noted on shop drawings.

Glass

A Glass
Glass shall conform to Federal Specification DD-G-0045c, type 1; class 1 or 2; quality q3. Fully tempered glass shall meet Federal Specification FF-G-140 3B, condition A, type 1, glass 1, quality q3. No tempering tong marks, pits, mars or scratches are to be in evidence on any visible glass surface. All edges are to be swiped and polished.

B Sandblasting
Sandblasted surfaces shall be even, without visible streaking or patches, depth of sandblasting, grit size and material to be determined prior to fabrication. Factory sandblasted finish may also be used.

C Glazing & Sealing Materials
Neoprene setting blocks to be solid, 70 to 90 Shore A hardness, size to suit condition; Neoprene wedges and spacers to be solid, 50 Shore A hardness, size to suit condition; Neoprene cushions and gaskets to be closed cell sponge, 20 to 30 Shore A hardness, size to suit condition.

Tactile/Braille Messages

Transgrafix, photo polymer, or metal-etched sign faces refers to a polyamid resin surface in which graphic and braille letterforms are raised a minimum of 1/32” with photomechanical stratification processes. This tile is then permanently adhered with a solid sheet of VHB tape, by 3M or approved equal, to acrylic or other material of specified thickness and finished as one unit. Background color shall be custom in using Polyurethane coating, graphics are digitally printed, photo-screen printed, or hot stamped, and entire plaque is then clear-coated with a protective, non-yellowing, matte finish of Matthew’s Acrylic Polyurethane in Satin Clear.

Tactile and Braille messages may also be created by permanently adhering letterforms or symbols, minimum 1/32” thickness to meet ADA requirements, to any matte or satin finish material. Grade 2 Braille beads are also individually permanently adhered.

Tactile lettering shall be accompanied by California (Grade 2) Braille. Braille dots shall be domed or rounded, and spaced 1/10” on center in each cell with 2/10” space between cells, measured from the second column of dots in the first cell to the first column of dots in the second cell. Dots shall be raised a minimum of 1/40” above the background.

Braille shall be place a minimum of 3/8” or a maximum of 1/2” directly below the tactile lettering, and either flush-left or centered.

Where tactile lettering is multi-lined, all Braille is placed together below all the lines of tactile text.

Tactile lettering shall be between 5/8” and 2” high and the letter shall be raised at least 1/32”.

Tactile lettering shall be UPPERCASE.

There shall be no sharp surfaces on Braille, letterforms or symbols.

Fasteners and Hardware

A Fasteners

Bolts, nuts, screws, washers, anchors and other devices required for proper functioning of signs. Furnish of matching metal and alloy, matching finished color and texture as metal being fastened, unless otherwise indicated. Provide fasteners with rated holding power four (4) times design working load. Where exposed to view, fasteners shall be countersunk and tamper resistant. Perform drilling and tapping at shop prior to installation.

For aluminum, use aluminum or stainless steel to suit condition and as specified. For stainless steel, use stainless steel, AISI Type 304, non magnetic.

B Hardware

Provide and install all incidental hardware necessary for the proper functioning of signs, including but not restricted to materials and products covered in this section. Provide stainless steel hinges for all hinged access panels. Provide pin tumbler locks for all access panels requiring locks. Provide stainless steel fasteners for assembling all ferrous and non-ferrous metals.

External hardware shall conform to the external appearance of the sign, match the adjacent surface finish, and be tamper resistant.

Adhesives

A Adhesives required in fabrication and installation shall be compatible with the materials to be laminated or adhered. Adhesives shall be as specified for fabrications and used in accordance with the recommendations of the manufacturer of the adhesives and the material to be laminated or adhered.

B Adhesives shall be of a type formulated to not deteriorate, discolor, delaminate, or fail in adhesion for any reason including exposure to heat, sunlight, weathering or other environmental conditions. Clear or light color types shall be non-yellowing.

C Adhesives shall not change the color of, stain, or in any way deteriorate the materials to which they are being applied.

D Epoxy adhesives, in addition to general requirements specified, shall be clear, two-component epoxy, thermal-setting, premium quality materials.

E Use concealed black polyfoam contact adhesive tapes such as Isotac™ manufactured by 3M, or approved equal, in conjunction with silicone adhesives for installation of wall signs, in minimum thicknesses available.

F Use one-part silicone adhesives, 20 to 30 “Shore A” hardness, clear or custom color as specified. Silicone adhesives such as 999™ as manufactured by Dow Corning, Silicone Sealant 1200™ as manufactured by G.E., or approved equal. Sealant primers and backing shall be as recommended by sealant manufacturer for condition of use.

Digital Printing

A Backlit UV Film (Digital)
Information wall signs and backlit maps are digitally printed CMYK (full process color) on one side 5 ml backlit substrate. Substrate and inks must be UV inhibited. This material must have 2 year outdoor lifespan. Requires 10/5 l UV inhibited mat-satin laminate with full encapsulation (15 ml density total for lamination). Resolution is photo quality with no discernable dot pattern; all text and images are sharp, crisp and clear.

B Encapsulated Cover Stock (Painted on Press)
Bus pole cube inserts are printed 1/0 (black ink) printed on press onto 15 point white cover stock, coated one side. Example of brands of stock: “Carolina” and “King James”. Prints in the Metro Print Shop. Encapsulate with 1.7 ml (each side) UV inhibited laminate. (As of 6/07, outside print vendor performs lamination process).

C Adhesive Transit Vinyl (Digital or Silkscreen)
Bus Kings, bus tail ads, evergreen rail poster decals and rail windbreaker panel decals use adhesive transit vinyl such as Flexcon Busmark™, 3M 160-30, Avery Transit vinyl, or approved equal. Image is CMYK (full process color) digitally produced or silk-screened CMYK (full process color) or spot PMS inks. (Method of production depends on quantity needed or by the artwork). Artwork is reproduced 35 DPI (low rez). Requires UV inhibited and graffiti-resistant gloss laminate.

D Removable Vinyl
Rail Line Maps are printed on MacTac™ removable vinyl [series TBD], with a minimum short lifespan of 6 months. These are screen printed 8/0 – black + 6 Pantone™ colors + an OA UV clear coating.

Vinyl, Decals, and Film

A For Vinyl Die-Cut & Pattern-Cut Graphics

Use pressure sensitive, non-yellowing, non-peeling exterior grade and weather resistant vinyl adhesive letters or images, custom flood coated as required, die cut from ScotchCal™ or ScotchLite™ as manufactured by 3M, General Formulations Permanent Vinyl, or approved equal. Apply in strict accordance with manufacturer's instructions. Make uniformly smooth and free from bubbles, wrinkles, stretching and blemishes.

B Vinyl Sign Substrate

3M Panaflex™ Awning and Sign Facing Series 945 GPS: A durable, flexible, translucent, dimensionally-stable, cast vinyl material. It functions as a substrate for creating day/night graphics in signs and awnings. This substrate has a polyester scrim embedded in a white-pigmented vinyl. Both surfaces have built-in dirt resistance. The front surface is smooth and has a semi-gloss appearance; graphics should be applied only on the front surface of this substrate.

C Reflective Graphic Film

1. Bus stop signs and Blue Line Commuter rail cars utilize 3M Scotchlite™ Flexible Reflective Graphic Film, 680CR [formerly 580-10] in white and colors, relective aluminum as manufactured by 3M with removable Comply™ adhesive. These graphics have a similar daytime and nighttime appearance. The film has positionable, pressure-activated adhesive and a total thickness of .007 to .008 inches.

2. The Red Line Commuter rail line cars use 3M Scotchlite™ Flexible Reflective Graphic Film, ZC 0065 in white or colors as manufactured by 3M with permanent Comply™ adhesive.

3. Signage uses 3M Scotchlite™ Flexible Reflective Graphic Film, 3M Engineer Grade Reflective sheeting.

D Non-reflective Graphic Film

1. Blue Line Commuter rail cars utilize 3M Controltac™ Non-Reflective Graphic Film, 180CR in white, non-relective aluminum as manufactured by 3M with long-term removable Comply™ adhesive. The film has positionable, pressure-activated adhesive and a total thickness of .007 to .008 inches.

2. The Red Line Commuter rail line cars use 3M Contoltac™ 181CR in white as manufactured by 3M with long-term durable, permanent Comply™ adhesive.

E Graffiti

1. When appropriate use Graffitigard™ protective films in 7mil thickness, clear, to enable easier removal of graffiti. Manufactured by Bekaert Specialty Films [BSF] or approved equal.

2. When appropriate, use Matthew's Acrylic Polyurethane [MAP] Satin Clear sealer [item 42-228] as an overcoat sealer to MAP painted finishes. This will enable easier graffiti removal with mineral spirits. Paint remover is not a viable product to remove graffiti as this could remove screen printed text and graphics.

3. When appropriate, use texture coat lamination in specified thickness.

4. When appropriate, use Cardinal 6409 Servies Polyurethane (anti-graffiti version), clear.

F Permanent Vinyl Decal

Use General Formulations Permanent Vinyl with 5mil texture coat (floor-graphic approved coating) for easier removal of graffiti. Materials should be positionable with pressure-sensitive adhesive.

D Window Decal, Vinyl

Use Gerber High-Performance Series 220/White with texture coat for easier graffiti removal. UV inks/coatings.

H Static Cling

Use Opaque (white) Static Cling with adhesive front (for outward-facing graphics). Material should be positionable with pressure-sensitive adhesive. UV inks/coatings.

Paint and Sealers

A Acrylic Linear Polyurethane enamel
Use two components, acrylic aliphatic isocyanate/acrylic polyurethane having ultraviolet (UV) inhibitors and engineered for exterior application by Matthews Paint Company or approved equal.

B Linear Polyurethane Paint
Provide pretreatment and primer in accordance with manufacturer's recommendation. Add ultraviolet inhibitors to paint subject to sunlight exposure.

C Primer for Aluminum
Two part component primer: One-coat Matthews 74-734 and 74-735 Metal Pretreat at .25 mils dry film thickness or one-coat Matthews 74-793 Spray Bond at .15 to .25 mils dry film thickness or Wyandotte/AKZO Grip-Guard Wash Primer (2Afy-31284) with Grip-Guard Wash Primer Hardener (10AFK-31285) combined and applied per manufacturer's specifications or approved equal (primer) for the application of the pre-approved and pre-formulated paint system.

D Primer for Steel
Two part component primer: One-coat Matthews 74-734 and 74-735 Metal Pretreat at .25 mils dry film thickness or Wyandotte/AKZO Grip-Guard Wash Primer (2Afy-31284) with Grip-Guard Wash Primer Hardener (10AFK-31285) combined and applied per manufacturer's specifications or approved equal (primer) for the application of the pre-approved and pre-formulated paint system.

E Clear Sealers
1. Use satin clear matte acrylic polyurethane sealers by Matthews Paint Co. or approved equal. Sealers are to resist rust and corrosion associated with exposure to salt air. Sealers also provide resistance to graffiti and provide ease of graffiti removal with mineral spirits.

2. Provide pretreatment, primer, and matte or semi-gloss finish coatings in accordance with manufacturer's recommendations. Apply 1.5 to 2.0 mils (0.0375 to 0.050mm) dry film thickness.

F Anodized Aluminum Components/Panels
If required, provide anodized (application of aluminum oxide film coating in clear or colored dye finish) aluminum panels or parts to match Metro color, grain, finish and all other specifications.

G Vinyl Die-Cut and Pattern Cut-Out Graphics
Use 3M Scotchcal® Opaque and Translucent film and Scotchcal® Diamond Grade VIP Scotchlite® Reflective film manufactured by 3M where specified. Use pressure-sensitive, non-yellowing, non-peeling and weather resistant vinyls as specified. Use approved fonts and equipment as specified.

H Painted or Screen Printed Graphics
All graphics to be applied using photo processed screens from camera ready art, arranged to furnish sharp and solid images without build-up or bleeding of the coating. Comply with coating manufacturer's application instructions. Provide proper type of primer to suit each substrate and obtain a permanent bond. Verify compatibility of each substrate with the coatings to be used on the project. Apply the markings with neat edges, minimum 3 mils (0.075 mm) dry film thickness and as required to obtain solid markings without voids. Provide photo processed screens, arranged to furnish sharp and solid images without edge build up, bleeding or crazing of the coatings. Pattern-cut screens may be used for non-repeat copy, provided that final image copy is equal to photoscreen quality. Provide only weather-resistant coating materials, compatible with the intended substrates.

I Acid-Etched Graphics
Acid-etched typography and graphic imagery must be an average of 1/16" deep, with clean, crisp, sharp edges. Ragged or soft (polished out) edges will be rejected. Acid baths used for etching should be fresh and used in an environment and temperature that will provide the highest quality etched images. Colorfill as indicated by the S/P color and

Paint and Sealers continued

finish schedule, keeping inks and fills true to the edges of letterforms/graphics.

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FRP

A Fiberglass Reinforced Polyester

1. Custom engineered one-piece seamless fiber-reinforced polyester (FRP) monolith consisting of initial-gel-coat sealing layer with multilayers of (translucent) thermoset polyester resin and (translucent) glass fiber strands molded in forms maintaining module configuration to 0.125 minimum thickness with 3/16” radius all edges. Use of exposed fasteners is prohibited unless otherwise indicated on the design.

2. Internal reinforcement and structure shall be provided to prevent warping for the life of the sign elements, and structural support shall be engendered to withstand exterior windloads.

3. Core material shall be fully encapsulated resin impregnated honeycomb (expanded foam) as required. All fiberglass (FRP) signs shall be finish coated with UV inhibitors and crystal clear matte polyurethane sealers.

4. Sign Fabricator to provide Metro with written instructions for maintenance and waxing of FRP signs. In the case of internally illuminated FRP signs, core will be hollow within structural frame to secure FRP molded panels and house illumination fixtures. Provide written instructions for re-lamping.

Concrete

A Installation of anchoring devices into concrete slab shall be designed to avoid penetrating existing reinforcing, conduit, waterproofing layers, and such that may be contained in the concrete slab. Coordinate with Construction Manager for Metro.

Contractor shall furnish all materials for use in concrete for footings and foundations, including cementitious materials [portland cement only], water, sand, coarse aggregate, and specified admixtures [if any]; cement shall be well mixed and brought to the consistency appropriate for specified use. Sand and coarse aggregate shall consist of clean, hard, dense, durable, uncoated rock fragments that are free from injurious amounts of dirt, organic matter, and other deleterious substances. Sand and coarse aggregate shall meet all requirements of ASTM C 33. Portland cement shall meet all requirements of ASTM C 150. Verify cement strength uniformity in accordance with ASTM C 917.

Contractor shall furnish all reinforcing bars, j-bars, and materials for curing concrete.

Electrical Components and Lighting

A Electrical Components

1. Electrical Wiring and Equipment—Provide and install electrical materials such as ballasts, transformers, lamps, sockets, neon units, connectors, and all other equipment which shall be new and shall be approved by Underwriters Laboratories, Inc. The assembly of all components within the illuminated signs shall conform to all standards of Underwriters Laboratories, Inc. as published in the latest edition of "Standards for Sign Safety" and all illuminated signs shall bear the U.L. label. All wiring and equipment shall be concealed within the sign structure.

2.Conduit and Devices—Provide rigid steel conduit, junction boxes and associated devices in accordance with applicable codes as required.

3. Wiring—Minimum #12 AWG copper; High tension wiring shall not be less than GTO 15 wire as manufactured by Carol Cable company or approved equal. All wiring shall be AWM 90 0 centigrade 1000 volt TW/MTW U.L. file no. 18971. Wiring connectors for wire splicing shall be U.L. approved 1000 volt capacity. They shall be Scotch Lock type Y or R or approved equal. All splices shall be placed as to easily access for inspection.

4. Ballasts—As required for internally illuminated cabinet signs, in quantity and arrangement as recommended by ballast manufacturer; accessible for maintenance.

5. Disconnect Switch—All signs or sign components with electrical service shall be equipped with an approved external disconnect switch, flush mounted on the cabinet/sign, with circuits and capacity to control all primary wiring within the sign. Location of switch must be shown on shop drawings and is subject to approval.

6. Illumination—All signs with fluorescent fixtures shall utilize minimum 800 miliamp T8 output cool white fluorescent lamps at the length and placement necessary to provide even illumination without light leaks or hot spots. All lamps and ballasts shall be provided by the Sign Fabricator. Provide waterproof flush access panel(s), concealed wherever possible. Conduit wiring and electrical equipment from the field electrical connection to any part of the sign and within the sign shall be provided by the Sign Fabricator.

7. Ventilation—While maintaining a proper weather seal, provide for sufficient ventilation of sign components to prevent overheating or warpage; allowing for color of sign, mounting surface, climate conditions, etc. In providing for ventilation, protect sign from elements (rain, wind, debris, etc.) that might cause operational or cleaning problems. Signs and cabinets with light leaks will not be accepted.

B Lighting

1. All lighting must comply with the standards set forth in the NEC, NFPA and CEC Title 24 for outdoor signs and the UL.

2. All lighting requires the following:
   - Lamps shall be long life type, 12,000 hours minimum
   - Ballast shall be electronic, energy efficient type suitable for outdoor use,
   - 20 degrees F rated
   - Wiring shall be copper, 600 volt minimum insulation
   - Lamps shall be spaced to provide uniform illumination at the surface of the letters. Provide approval drawings.
   - Provide ease of access for maintaining internal components of sign
   - All components shall be UL listed

C Neon

1. Provide neon lighting as shown on drawings including all components and electrical connections. Provide the final power supply connection to the transformer from existing wired junction box.

Electrical Components and Lighting continued

2. Tubing—Use concealed neon and/or exposed NeoForm neon tubing in the shape of each letter, using tubes individually filled at optimum pressure required for uniform lighting. Use highest quality glass tubing, 3/8” diameter minimum. Provide resulting neon colors (quantity to be determined); provide cost estimates for all colors as European colors.

3. Electrodes—Use type 8C as manufactured by Engineering Glass Laboratories, Newark, NJ, or approved equal.

4. Tube Supports—Buttress threaded glass posts, not less than 3/8” (9.5mm) diameter, adjustable type. Securely attach tubes to supports with pure annealed copper wire ties, without strain on tubing.

5. Transformers—4030 low power factor type, loaded not in excess of 85% of manufacturer’s maximum recommended footage of neon tubing.

6. Power Distribution—Not less than 12 ga. THW rubber covered copper wire for all primary circuit wiring. 15 KV type high tension cable, insulated from metal by non-porous ceramic supports and/or tubes. Provide raceways of 16 ga., 1.6 mm) Zinc-Grip A metal with enamel finish, and 1-1/2” x1-1/2” (38 x12.5mm) by 1/4”, (6mm) galvanized steel angles.

General

A Questions

Requests for clarification may be addressed by telephone or in writing to:

Kim Bueno
Senior Public Arts Officer
Metro
One Gateway Plaza
Mail Stop 99-19-1
Los Angeles CA 90012-2952
213 922 7695 (phone)
213 922 2719 (fax)
buenok@metro.net

B Qualifications

Indicate qualifications of firm and personnel to be assigned to this project. Firm must have fabricated and managed projects of similar scale and high level of quality as this one during the last seven [7] years. Firm has been in operation and in this business at least seven [7] years. Submit evidence of this and of projects completed of a similar scale and quality.

C Codes

It will be the responsibility of the successful bidder to meet the latest editions of any and all local, state and federal code requirements when fabricating and installing signs, including California ADA (Americans with Disabilities Act) requirements as applicable.

D Substitutions

The successful Sign Fabricator will be held to furnish, under Sign Fabricator's complete bid, all work as specified. All materials, paint colors, and articles of any kind necessary for the work are subject to the approval of Metro. Approval shall be final and conclusive. All bids shall be in compliance with these instructions. Bidder must obtain prior approval from Metro, at least five (5) days before bid opening, for substitute materials or methods; approved substitutions shall be shared with other bidders. After execution of the contract, all substitutions shall be governed by the Specifications.

E Coordination with Construction Manager

The Sign Fabricator will coordinate on-site work, electrical hook-up connections and final sign placement with the Construction Manager for each parcel of land. Where structural support for signage is required on the Contract Documents, it shall be provided and installed by the Sign Fabricator, and all adjacent landscaping repaired as required.

F Requirements

Provide signage/graphics in accordance with Metro Graphic Standards, Sign Location Plans and Sign Message Schedules as provided by Metro, and in accordance with the Metro BRT Design Criteria, section 6.9 "Signage & Graphics," Metro Rail Design Criteria, section 6.10 "Signage & Graphics," or other approved documents.

All designs for signage shall be submitted to Metro Creative Services for review and approval prior to fabrication.

G Safety Training

The successful Fabricator must attend Metro safety training (at no cost to the Fabricator) and be certified by Metro's Rail Operation Department.

H Contact

The Contractor must provide an emergency contact number and respond to emergency calls from the Metro within two (2) hours after receiving a call.

I Time of Completion

Time is of the essence. Contractor must obtain approval from Metro on time required to complete each task. Sign Fabricator shall complete all work in accordance with the scheduled milestones. All activities shall be sequenced to coordinate with field progress.

J Pre-Construction Conference

A pre-construction meeting will be held with representatives from Sign Fabricator and Metro to establish the procedure for communication and coordination with the Construction Manager and subsequent trades.

General continued

K **Materials/References**

Verify compliance with the latest editions of:

- UBC - United States Uniform Building Code
- National Association of Architectural Metal Manufacturers (NAAMM) "Metal Finishes Manual."
- American Welding Society (AWS) – AWS D1.1 "Structural Welding Code, Steel," and AWS D1.2 "Structural Welding Code, Aluminum."
- Underwriters Laboratories Inc. (UL) – Standards for Safety, UL Publication 48 "Electric Signs."
- Porcelain Enamel Institute [PEI] and the Vitreous Enamel Development Council [VEDC].
- Structural calculations for all designs shall be based on seismic zone 4.

L **Submittals**

1. Shop Drawings provided by Sign Fabricator and with structural calculations signed and stamped with the seal of a Structural Engineer licensed in the State of California. Furnish elevations, details of fabrication and erection, including all materials, dimensions, finishes, wind load calculations, anchorage, and method of connections. Also include details of the sign supports, foundations, footings, and concealed electrical conduits. Show proper letterspacing and dimensions of letter heights on full scale computer printout.

2. Color and Material Samples
Submit per finish color schedule, for approval. Provide 3 sets of 6" x 6" non-returnable samples of all materials, colors, and finishes as specified.

3. Full Size Patterns for Lettering
Submit for approval full-size patterns of each sign with solid black letterforms and graphic elements on a white background with sign face outlined. Typography must be represented in exact typeface and letterspacing specified on computer printouts or as pen plots when computer-cut lettering is specified. Graphic elements must be represented either by film positives or computer printouts. produced from final artwork.

4. Future Maintenance Materials
Deliver to Metro, in manufacturer's original packaging and store at the project site where directed.

- Furnish [1] gallon of each finish paint color for touch-up purposes. Include information on each paint manufacturer and order code numbers.
- Furnish [6] lamps of each type and size used in the signage.
- Provide [6] tools for each tamper resistant fasteners type used.

5. Supplementary Product Literature
Furnish within seven (7) days of request, manufacturer's literature describing the general properties of each product used in the work.

6. Structural Calculations
Provide exterior sign assemblies designed, tested, and installed, to withstand positive and negative wind loads per site requirements approved by a Structural and/or Civil Engineer, licensed in the State of California. Furnish engineering calculations to show that maximum stresses and deflections of signage, signage support system, and footings do not exceed specified performance requirements under full design loading. Calculations shall be prepared, signed and stamped with the seal of a Structural Engineer licensed in the State of California.

M **Permits by Sign Fabricator**

Sign Fabricator shall make all submittals for permits; shall be responsible for paying all fees, making adjustments as required, or any task necessary for obtaining local building and installation Sign Permits for the proper execution of the work.

Quality Assurance

A Mock-ups and Prototypes
Provide a mock-up of each sign type within contracted scope for review. The requested sign types are specific per project. Refer to sign drawings for further information. Utilize the same materials and installation methods in the mock-up as intended for the final work. Schedule the installation so that the mock-up may be examined, and any necessary adjustments made, prior to commencing fabrication of the final work. Replace unsatisfactory items as directed. When accepted, mock-up shall serve as the standard for materials, workmanship, and appearance for such work throughout the project.

B Work-In-Progress Approvals
Provide work-in-progress sign elements for review. Scheduled viewings at the Shop or Factory may be initiated as deemed necessary to ensure continued quality control and to make any adjustments required during fabrication. Unsatisfactory items are to be corrected by the Sign Fabricator as directed.

C Regulatory Requirements
Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals and permits from all such authorities as required.

D Markings and Labels
Locate markings, labels, manufacturer names and other identifications so as to be concealed from public view and as acceptable by Metro.

E Final Location of Signs
In some cases, the location of signs as shown on the Metro Location Plans is no longer representative of the exact final location. Locations of signs in question shall be identified, and then be field verified and located in coordination with a Metro representative at the site. Sign Fabricator shall arrange for meetings at the site to accommodate direction of final locations according to project schedule.

F Lettering
The Sign Fabricator shall be responsible for the quality control of all lettering. All letterforms shall be crisp, sharp, free of nicks, ragged edges and discontinuous curves. All lettering shall conform to approved typeface, weight and letterspacing. No substitutions of typeface foundry, brand or version or implementation technique will be accepted without prior approval.

G Vinyl Die Cut Graphics
All camera-ready artwork shall be anagraph scanned for cutting on a computerized vinyl cutting device, as manufactured by Gerber or approved equal. All cutting and routing shall be executed in such a manner that all edges and corners of finished letterforms are true and clean. Letterforms with rounded positive or negative corners, nicked, cut, or ragged edges, etc., will not be accepted. All letterforms shall be so aligned as to maintain a baseline parallel to the sign format. Margins must be maintained as specified in drawings.

H Quality of Workmanship
The Sign Fabricator shall be responsible for the quality of all materials and workmanship required for the execution of this contract including materials and workmanship of any firm or individual who act as Sign Fabricator's sub-contractor. Sign Contractor shall be responsible for providing up-to-date drawings, specifications, graphic schedule, etc., to all sub-contractors. All work under this contract shall be performed by skilled craftsmen under supervision of trained foremen, experienced in the trade or craft required to accomplish the work and produce a product of high quality.

I Dimensions
Written dimensions on drawings shall have precedence over scaled dimensions. Sign Fabricator shall verify and be responsible for all dimensions and conditions shown by these drawings, seeking clarification from Metro in

Quality Assurance continued

the case of a discrepancy. Shop details must be approved prior to fabrication.

J Discrepancies
The Construction Manager shall be notified by Sign Fabricator of any discrepancies in the drawings or graphic message schedule, in field dimensions or conditions and/or changes required in construction details.

K Rights to Design
Sign Fabricator may not manufacture, reproduce, or exhibit these designs, or modify them for any other purpose outside of this current contract without written approval of Metro.

Warranties

A Submit to Metro for documentation, a two [2] year written warranty (effective the date of final acceptance of the punchlist) covering all signs, signed by the Sign Fabricator and Installer, agreeing to repair or replace work which has failed as a result of defects in materials or workmanship or installation. Upon notification of such defects, within the warranty period, make necessary repairs or replacement at the convenience of and without additional cost to Metro.

B **Linear Polyurethane Paint Factory Finish Warranty**
Submit to Construction Manager for Metro's record documentation a [2] year written warranty, warranting that the factory-applied linear polyurethane finishes will not develop excessive fading or excessive non uniformity of color or shade, and will not crack, peel, pit, corrode or otherwise fail as a result of defects in materials or workmanship within the following defined limits. Upon notification of such defects, within the warranty period, make necessary repairs or replacement at the convenience of and without additional cost to Metro.

1. "Excessive Fading"
A change in appearance which is perceptible and objectionable as determined when visually compared with the original color range standards.

2. "Excessive Non-Uniformity"
Non-uniform fading to the extent that adjacent panels have a color difference greater than the original acceptable range of color.

3. "Will Not Pit or Otherwise Corrode"
No pitting or other type of corrosion, discernible from a distance of 10' resulting from the natural elements in the atmosphere at the project site.

Maintenance Manual

A Submit 2 copies to Metro for record documentation Maintenance and Operating Manuals. Furnish complete manuals describing the materials, devices and procedures to be followed in operating, cleaning and maintaining the work. Include manufacturers' brochures and parts lists describing the actual materials used in the work, including metal alloys, finishes, electrical components and other major components. Assemble manuals for component parts into single binders identified for each system.

B Prior to acceptance, establish with Metro an instruction and training program for Metro personnel. Coordinate with Metro in writing to establish the start date and timing of a program providing an outline of topics indexed to the Maintenance and Operating Manual. Provide a trained instructor during two consecutive 4-hour periods of training. Instruction and training shall include, but are not limited to, procedures to be followed in the normal day-to-day maintenance and operation of the work provided.

Finishing Materials

A Linear Polyurethane Coatings/Acrylic Linear Polyurethane enamel
Two components, acrylic aliphatic isocyanate/ acrylic polyurethane having ultraviolet (UV) inhibitors and engineered for exterior application by Matthew's Paint Company or approved equal.

B Primer for Aluminum
Two part component primer: One-coat Matthew's 74-734 and 74-735 Metal Pretreat at .25 mils dry film thickness or one-coat Matthew's 74-793 Spray Bond at .15 to .25 mils dry film thickness or Wyandotte/ AKZO Grip-Guard Wash Primer (2Afy-31284) with Grip-Guard Wash Primer Hardener (10AFK-31285) combined and applied per manufacturer's specifications or approved equal (primer) for the application of the pre-approved and pre-formulated paint system.

C Primer for Steel
Two part component primer: One-coat Matthew's 74-734 and 74-735 Metal Pretreat at .25 mils dry film thickness or Wyandotte/ AKZO Grip-Guard Wash Primer (2Afy-31284) with Grip-Guard Wash Primer Hardener (10AFK-31285) combined and applied per manufacturer's specifications or approved equal (primer) for the application of the pre-approved and pre-formulated paint system.

D Clear Sealers
1. Use satin clear matte acrylic polyurethane sealers by Matthews Paint Co. or approved equal. Sealers are to resist rust and corrosion associated with exposure to salt air. Sealers also provide resistance to graffiti and provide ease of graffiti removal with mineral spirits.

2. Provide pretreatment, primer, and matte or semi-gloss finish coatings in accordance with manufacturer's recommendations. Apply 1.5 to 2.0 mils (0.0375 to 0.050mm) dry film thickness.

E Anodized Aluminum Components/Panels
If required provide anodized (application of aluminum oxide film coating in clear or colored dye finish) aluminum panels or parts to match Metro color, grain, finish and specifications.

F Screen Printing Materials
All graphics to be applied using photo processed screens from camera ready art, arranged to furnish sharp and solid images without build-up or bleeding of the coating. Pattern-cut screens may be used for non-repeat copy, provided that final image copy is equal to photo screen quality. Provide only weather-resistant coating materials, compatible with the intended substrates. Comply with coating manufacturer's application instructions. Provide proper type of primer to suit each substrate and obtain a permanent bond. Verify compatibility of each substrate with the coatings to be used on the project. Apply the markings with neat edges, minimum 3 mils (0.075 mm) dry film thickness and as required to obtain solid markings without voids. Provide photo processed screens, arranged to furnish sharp and solid images without edge build up, bleeding or crazing of the coatings. Pattern-cut screens may be used for non-repeat copy, provided that final image copy is equal to photoscreen quality. Provide only weather-resistant coating materials, compatible with the intended substrates.

G Vinyl Die-Cut and Pattern Cut-Out Graphics
Use Scotchcal™ Opaque and Translucent film and Engineer Grade Reflective Sheeting manufactured by 3M where specified.Use pressure-sensitive, non-yellowing, non-peeling and weather resistant vinyls as specified. Use approved fonts and equipment as specified.

H Linear Polyurethane Paint
Provide pretreatment and primer in accordance with manufacturer's recommendation. Add ultraviolet inhibitors to paint subject to sunlight exposure.

I Acid-Etched Graphics
Acid-etched typography and graphic imagery

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Finishing Materials continued

must be an average of 1/16” deep, with clean, crisp, sharp edges; ragged or soft (polished out) edges will be rejected. Acid baths used for etching should be fresh and used in an environment and temperature that will provide the highest quality etched images. Colorfill as indicated by the S/P color and finish schedule, keeping inks and fills true to the edges of letterforms/graphics.

Fabrication of Signs and Supports

A General

Provide custom manufactured sign assemblies, components completely fabricated and finished at factory before delivery to site. Construct to accurate detail and dimensions as shown and as reviewed on shop drawings. Fit and assemble the work at shop to the greatest extent possible, and mark the components as required to facilitate assembly during installation. Exposed fasteners on finished faces will not be allowed, unless specifically indicated. Oil canning of surfaces is not acceptable. Minimum material thickness is to be 0.9375”. Conceal wiring, conduct and other electrical items within sign enclosures.

B Lettering

Cut and rout in a manner to produce true and clean edges and corners of finished letterforms. Letterforms having rounded positive or negative corners, nicked, cut, or ragged edges are not acceptable. Align letter forms to maintain a baseline parallel to the sign format as indicated on drawings. Maintain margins as indicated on drawings.

C Seams and Joints

Added joints shall be filled, ground smooth, and finished flush with adjacent work. Such seams shall be invisible after final finish has been applied. Spot welded joints shall not be visible on exterior of signs after final finish has been applied. No gaps, light leaks, waves, or oil canning will be permitted in work.

D Metal Signs and Supports

Fabricate exposed surfaces uniformly flat and smooth, without distortion, pitting, or other blemishes. Form exposed metal edges to a smooth radius. Permanently bond the laminated metal components and honeycomb core with adhesive or sealant in accordance with product manufacturer’s recommendations. Grind exposed welds and rough areas flush with adjacent smooth surfaces.

1. Welding—Make welds continuous. Comply with American Welding Society, Aluminum Association, and Copper Development Association Standards regarding the types of metal.

2. Fasteners—Use exposed fasteners only where indicated. Perform drilling and tapping at shop.

3. Dissimilar Materials—Where metal surfaces will be in contact with dissimilar materials, coat the surfaces with epoxy paint or plate with zinc chromate, and provide other means of dialectic separation as recommended by manufacturer to prevent galvanic corrosion.

E Castings

Exposed surfaces uniformly free from porosity and roughness. Edges filled and ground smooth. Faces chemically etched and mechanically polished for specified finish.

F Drainage

In consideration of the geographic area Metro serves [including beach front cities] Contractor must seal all portions of signs and provide provision for drainage at voids or areas where water may accumulate.

G Galvanizing

Provide for steel components in exterior construction, and where noted, to be galvanized. Complete the shop fabrication prior to application of the zinc coating. Remove mill scale and rust, clean and pickle the units as required for proper pretreatment of the surfaces.

H Hardware

Provide all incidental hardware necessary for the proper functioning of signs. External hardware shall conform to the external appearance of the sign.

I Supports and Backing in Walls

Sign Fabricator shall provide engineered sign supports anchored to building structure where required and to meet requirements of applicable building codes. Support or backing

Fabrication of Signs and Supports continued

requiring installation within the building wall construction shall be immediately relayed to Metro for advance field coordination.

J Vertical Steel Pole Sign Support
Sign Fabricator shall design vertical sign supports and footing(s) per applicable code requirements.

Shop Application of Sign Finishes

A Sign Graphics
Provide the letters, numerals, symbols, and other graphics markings, using the finish materials shown. Apply the graphics neatly, uniformly proportioned and properly letterspaced, and accurate within the dimensions indicated. Prepare the substrate surfaces and apply finish materials in accordance with manufacturers' instructions.

B Metal Finishes
Remove scratches, abrasions, dents and other blemishes before applying finish. Apply the following to the fabricated work, with texture and reflectivity as required to match Metro's sample.

C Linear Polyurethane Finishes
Clean the surfaces as required for proper adhesion of coatings. Use 3M Scotch Brite™ pads with cleanser and water, and/or chemically treat as recommended by paint manufacturer to remove deleterious film or residue.

D Linear Polyurethane Paint
Provide pre-treatment and primer in accordance with manufacturer's recommendation. Add ultra violet inhibitors to paint subject to sun exposure.

E Clear Linear Polyurethane Finish
Provide pre-treatment, primer, and matte or semi-gloss finish coatings in accordance with manufacturer's recommendations. Apply 1.5 to 2.0 mils (0.0375 to 0.050 mm) dry film thickness.

F Porcelain Enamel
Use only specially formulated porcelain enamel frits, glazes and oxides as supplied by Ferro, Chivit, APEC, Pemco, and Degussa. These materials when combined and processed in final form shall be acid resistant in order to achieve an A or AA acid resistance rating. All surfaces of signs shall be finished and sealed to prevent staining of mounting surfaces in exterior installation.

All porcelain enamel steel shall be acid-resistant and show no variations in color when submitted to standard tests for staining. All tests shall conform to the Porcelain Enamel Institute Standards Tests for Special Properties and Classifications.

Porcelain enamel shall be impervious, inorganic glasses. All surfaces are to be prepared and porcelain enamel is to be applied by a recognized method and fired at temperatures which will fuse the enamel glass to the surface of the metal and will expel any volatile matter. Steel plates are to be given one coat of grip enamel on both the front and back surfaces and on all edges, and on the front surface one or more additional coats of colors as directed. Each color is to be fired separately and be uniform in thickness and color. The back surface and all edges are to receive a protective porcelain enamel coating over the ground coating, and such additional coats as may be necessary to counteract stresses that may be placed upon the steel plates because of the thickness of the enamel coating on the front surface.

The porcelain enamel surfaces shall be uniformly finished and shall be free from bubbles, holes, bumps, blemishes, imperfections and surface defects. The total thickness of coatings shall be not less than .015" on each side, except on portions bearing multiple colors and on corners and returns.

Graphic Application

A Preparation
Surfaces to receive the graphic markings shall be clean, dry, and otherwise made ready for application of the materials. Accurately measure and lay out the required marking configurations as indicated on drawings.

B Vinyl Die-cut and Pattern-cut Graphics
Use pressure sensitive, non-yellowing, non-peeling and weather resistant vinyl adhesive letters or images, custom flood coated as required, die cut from ScotchCal™ or ScotchLite™ as manufactured by 3M, or General Formulations Permanent Vinyl. Apply in strict accordance with manufacturer's instructions. Make uniformly smooth and free from bubbles, wrinkles, stretching and blemishes.

C Painted or Screen Printed Graphics
All graphics to be applied using photo processed screens from camera ready art, arranged to furnish sharp and solid images without build-up or bleeding of the coating. Comply with coating manufacturer's application instructions. Provide proper type of primer to suit each substrate and obtain a permanent bond. Verify compatibility of each substrate with the coatings to be used in the work. Apply the markings with neat edges, minimum 3 mils (0.075 mm) dry film thickness and as required to obtain solid markings without voids.

D Acid-Etched Graphics and Typography
Acid-etched typography and graphic imagery must be a minimum depth of 1/16", with clean, crisp, sharp edges; ragged or soft (etched or polished out) edges will be rejected. Acid baths used for etching should be fresh and used in an environment and temperature that will provide the highest quality and consistency of etched images. Color fill as indicated by the final color and finish schedule, keeping inks and fills true to the edges of letterforms/graphics.

Installation

A Examination

1. Verification of Conditions
Sign Fabricator must examine the areas to receive the work and the conditions under which the work would be performed. Contractor shall remedy conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

2. Pre-Installation Meeting
A pre-installation meeting will be held with Metro to mutually agree upon all installation details, placement, etc.

B Installation of Signs

1. General
Complete installation shall be in accordance with manufacturers' printed instructions and accepted shop drawings, to produce work complying with the Contract Documents. The Sign Fabricator will be responsible for daily clean-up of signs and their areas of work. Provide protective covering for signs as necessary during installation.

2. Erection of Signs
Set and attach the work accurately in location, alignment and elevation, plumb, level and true, as measured from established reference points and from other work already in place. Fit components accurately together to form tight joints and secure connections. Coordinate, through the Construction Manager with other trades and make connections of illuminated signs to electrical service. Exterior wall penetrations and blocking are to be coordinated immediately upon award of contract. Test illuminated sign components and adjust operation for proper performance.

C Adjusting

Neatly repair minor blemishes or marring on finished surfaces so that repairs are imperceptible. Completely replace components having permanent non-removable scratches, stains, or other defacement.

D Cleaning

Upon completion of the work, remove unused materials, debris, containers and equipment from the project site. Remove protective coverings and clean the exposed surfaces of the Work to remove dirt, stains and other substances, by methods as recommended by manufacture.

Documentation

A As-Built Drawings
Contractor shall prepare and submit final as-built drawings, specifications and current status documents for all signs provided and installed by the Sign Contractor. Refer to Metro Specifications Section 01720.

B Meeting Performance Specifications
If Contractor operates as a designbuild Contractor, he/she is responsible to prepare the final design drawings and specifications to meet the requirements of Metro Performance Specifications. Submit for Metro review and approval prior to any sign fabrication or installation.